## **Science: Biology**

	Pre 3	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including humans		I can understand the key features of the life cycle of a plant and an animal	I can explore the natural world around me, making observations and drawing pictures of animals and plants	I can identify, draw and label the basic parts of the human body and say which part of the body is to do with each sense.  I can identify and name a variety of animals that are carnivores, herbivores and omnivores.  I can spot and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.  I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	I can explain the needs of animals, including humans, for survival (water, food and air).  I can explain the importance for humans of exercise, eating the right amounts of different types of food and hygiene.  I notice that animals, including humans, have offspring which grow into adults.	I can 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.  I can identify why humans and some other animals have skeletons and muscles.	I can describe the simple functions of the basic parts of the digestive system in humans.  I can identify the different types of teeth in humans and their simple functions.  I can construct and interpret a variety of food chains, identifying producers, predators and prey.	I can describe the changes as humans develop to old age.	I can identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood.  I can recognise the impact of diet, drugs, exercise and lifestyle on the way our bodies function.  I can describe the way in which nutrients and water are transported within animals, including humans.
Working Scientifically				I can use observations to compare and contrast animals at first hand or through videos and photographs.  I can describe how I can identify and group animals. I can group animals according to what they eat.	I can observe, through video or first-hand observation and measurement, how different animals, including humans, grow.  I can ask questions about what things animals need for survival and what humans need to stay healthy.	I can identify and group animals with and without skeletons and observing and comparing their movement.  I can compare and contrast the diets of different animals (including pets) and decide ways of grouping them according to what they eat.  I can research different food groups and how they keep us healthy and design meals based on what I find.	I can compare teeth in carnivores and herbivores and suggest the differences for them.  I can find out what damages teeth and how to look after them.  I can draw and discuss my ideas about the digestive system and compare them with models and images.	I can research and compare the gestation periods of different animals to humans.	I can research and explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.
Living things and their habitats		I am beginning to understand the need to respect and care for the natural environment and all living things	I can explore the natural world around me.  I can recognise some environments that are different to the one in which I live.  I know some similarities and differences between the natural world around me and contrasting environments, drawing on my experiences and what has been read in class.		I can explain the differences between things that are living, dead and things that have never been alive.  I can explain 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.  I can identify some plants and animals in their		I can regonise that living things can be grouped in a variety of ways.  I can explore and use classification keys to help group, identify and name a variety of living things in my local and wider environment.  I can recognise that environments can change and that this can sometimes pose dangers to living things.	I can describe how some animals and plants reproduce.  I can describe the differences in the life cycles of a mammal, amphibian, insect and a bird.	I can give reasons for classifying plants and animals based on specific characteristics.  I can describe how plants, animals and microorganisms are classified into broad groups, according to common observable characteristics and based on similarities and differences.

				habitats, including				
				microhabitats.				
				I can 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.				T 1 16: 11
Working Scientifically				I can sort and classify things according to		I can make and use simple guides or keys to explore	I can observe and compare the life cycles of plants	I can use classification systems and keys to
				whether they are living,		and identify local plants	and animals in my local	identify some animals and
				dead or were never alive and record my findings		and animals.	environment with other plants and animals around	plants in the immediate environment.
				using charts.		I can ask and answer	the world.	environment.
				==g =		questions based on my		I can research unfamiliar
				I can explore questions		observations of animals	I can ask pertinent	plants and animals from a
				relating to living things eg		and what I have found out	questions and suggest	broad range of other
				is a flame alive? Is a		about animals I have	reasons for similarities	habitats and decide where
				deciduous tree dead in winter?		researched.	and differences.	they fit in the classification system.
				WITTELY			I can experiment growing	ciussificution system.
				I can construct a simple			new plants from different	
				food chain that includes			parts of the parent plant	
				humans.			eg seeds, stem, root	
				I can describe the			cuttings, bulb.	
				conditions in different			I can observe changes in	
				habitats and find out how			an animal over a period of	
				the conditions affect the			time, comparing how	
				number and type of plants			different animals	
				and animals that live			reproduce and grow.	
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Diamete	T any plant goods and ages	T can availant the national	T can have dains columns	there.	T and identify and december			
<u>Plants</u>	I can plant seeds and care for arowing plants	I can explore the natural	I can name some common wild and aarden plants	I can observe and describe	I can identify and describe functions of different			
<u>Plants</u>	I can plant seeds and care for growing plants	I can explore the natural world around me, making observations and drawing	I can name some common wild and garden plants including deciduous and		functions of different			
<u>Plants</u>	for growing plants  I can understand the key	world around me, making observations and drawing pictures of animals and	wild and garden plants	I can observe and describe how seeds and bulbs grow into plants.	functions of different parts of flowering plants: roots, stem/trunk, leaves			
<u>Plants</u>	for growing plants  I can understand the key features of the life cycle	world around me, making observations and drawing	wild and garden plants including deciduous and evergreen trees.	I can observe and describe how seeds and bulbs grow into plants.  I can find out about and	functions of different parts of flowering plants:			
<u>Plants</u>	for growing plants  I can understand the key	world around me, making observations and drawing pictures of animals and	wild and garden plants including deciduous and evergreen trees.  I can identify and	I can observe and describe how seeds and bulbs grow into plants.  I can find out about and describe how plants need	functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.			
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Working	for growing plants  I can understand the key features of the life cycle	world around me, making observations and drawing pictures of animals and	wild and garden plants including deciduous and evergreen trees.  I can identify and describe the basic structure of a variety of common flowering plants including trees.	I can observe and describe how seeds and bulbs grow into plants.  I can find out about and describe how plants need water, light and a suitable temperature to grow and stay healthy.	functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.  I can 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.  I can investigate the way that water is transported within plants.  I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and see dispersal.  I can compare the effect			
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Working	for growing plants  I can understand the key features of the life cycle	world around me, making observations and drawing pictures of animals and	wild and garden plants including deciduous and evergreen trees.  I can identify and describe the basic structure of a variety of common flowering plants including trees.  Observe closely, perhaps using a magnifying glass, and comparing and contrasting familiar plants.  Describe how I can	I can observe and describe how seeds and bulbs grow into plants.  I can find out about and describe how plants need water, light and a suitable temperature to grow and stay healthy.  I can observe and record, with some accuracy, the growth of a variety of plants as they change over time from seed to bulb.  I can observe similar plants at different stages	functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.  I can 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.  I can investigate the way that water is transported within plants.  I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and see dispersal.  I can compare the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser.  I can observe how water is transported in plants by			
Working	for growing plants  I can understand the key features of the life cycle	world around me, making observations and drawing pictures of animals and	wild and garden plants including deciduous and evergreen trees.  I can identify and describe the basic structure of a variety of common flowering plants including trees.  Observe closely, perhaps using a magnifying glass, and comparing and contrasting familiar plants.  Describe how I can	I can observe and describe how seeds and bulbs grow into plants.  I can find out about and describe how plants need water, light and a suitable temperature to grow and stay healthy.  I can observe and record, with some accuracy, the growth of a variety of plants as they change over time from seed to bulb.  I can observe similar	functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.  I can 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.  I can investigate the way that water is transported within plants.  I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and see dispersal.  I can compare the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser.  I can observe how water is			

		Draw diagrams showing the different plants including trees.  I can keep records of how plants have changed over time eg leaves falling off trees and buds opening.  I can compare and contrast what I have found out about different plants.	I can set up a comparative test to show that plants need light and water to stay healthy.	observing how water travels up the stem to the flowers.		
Evolution and Inheritance						I recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.  I recognise that living things produce offspring
						of the same kind, but normally offspring vary and are not identical to their parents.  I can identify how animals and plants are adapted to suit their environment in different ways and that adaption may lead to evolution.
Working Scientifically						I can observe and raise questions about how local animals are suited to their environment.  I can compare how some living things are adapted to survive in extreme conditions.
						I can analyse the advantages and disadvantages of specific adaptations eg being on two feet instead of four, having a long or short neck etc.

## **Science: Chemistry**

	Pre 3	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Uses of everyday materials/Properties and changes of materials	I can explore materials with different properties	I can explore collections of materials with similar and/or different properties  I can talk about the differences between materials and changes I notice	I can understand some important processes and changes in the natural world around me, including the seasons and changing states of matter	I can tell the difference between an object and the material from which it is made.  I can compare and group materials based on their simple physical properties.  I can identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock.  I can describe the physical properties of a variety 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.  I can find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.			I can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity and response to magnets.  I can explain that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.  I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.  I can demonstrate that dissolving, mixing and changes of state are reversible changes.  I can explain that some changes result in the formation of new materials and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	
Working Scientifically.	I can explore natural materials, indoors and outside	I can explore how things work  I can use all my senses in hands-on exploration of natural materials		I can ask questions about the materials I work with.  I can perform simple tests to explore questions	I can compare uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits in stories, rhymes and songs).  I can observe closely, identifying and classifying the uses of different materials and record my observations.			I can carry out tests to answer questions such as 'Which materials would be most effective for making a warm jacket?'  I can observe and compare changes that take place when burning different materials or baking bread or cakes.  I can research and discuss how chemical changes have impact on our lives eg cooking, polymers.	
Rocks						I can examine and do practical experiments on various types of rocks in order to group them on the basis of their appearance and simple physical properties.		соокіng, polymers.	

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				I can recognise that soils		
				are made from rocks and		
				organic matter.		
				I can simply describe how		
				fossils are formed and		
				things that have lived are		
				trapped within rock.		
I.						
Working				I can observe different		
<u>Scientifically</u>				rocks (eg in		
				buildings/gravestones) and		
				explore how they might		
				have changed over time.		
				I can identify and classify		
				rocks by whether they		
				have crystals, grains or		
				fossils in them, using a		
				microscope.		
				microscope.		
				T con investigatel. at		
				I can investigate what		
				changes occur when rocks		
				are rubbed together or		
				when water is added to		
				them.		
				I can raise and ask		
				questions about the way		
				soils are formed.		
States of Matter		I can understand some			I can group and compare	
States of Watter		important processes and			materials together	
		changes in the natural			according to whether they	
		world around me, including			are solids, liquids or gases.	
		the seasons and changing				
		states of matter			I can observe and explain	
					that some materials	
					change state when they	
					are heated or cooled and	
					measure or research the	
					temperature at which this	
					happens in degrees Celsius.	
					happens in degrees ceisius.	
					I can identify the part	
					I can identify the part	
					played by evaporation and	
					condensation in the water	
					cycle and can show the link	
					between the rate of	
					evaporation and	
					temperature.	
Working					I can explore the effect	
Scientifically					of temperature on	
					substances such as	
					chocolate, butter, cream	
					etc.	
					5.5.	
					I can research at which	
					temperature materials	
					change state.	
					I can observe and record	
					evaporation over time.	
				ė .		

## **Science: Physics**

	Pre 3	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Seasonal changes	I can explore and respond to different natural phenomena in my setting and on trips		I can understand the effect of changing seasons on the natural world around me.  I can understand some important processes and changes in the natural world around me, including the seasons and changing states of matter	I can observe changes through autumn, winter, spring and summer.  I can observe and describe the weather in autumn, winter, spring and summer and how the days get longer and shorter.					
Working Scientifically			I can describe what I see, hear and feel whilst outside.	I can make tables and charts about the weather.  I can make displays of what happens in the world around me, including day length, as the seasons change.					
Light						I can explain that I need light to see things and that dark is the absence of light.  I can notice that light is reflected from surfaces.  I can recognise that light from the sun can be dangerous and that there are ways to protect our eyes.  I can recognise how shadows are formed when the light from a light source is blocked by a sold object.  I find patterns in the way that the size of shadows change.			I can recognise that light appears to travel in straight lines.  I can explain that light travels in straight lines and that objects seen because they give out or reflect light into our eye.  I can demonstrate and explain that we see things because light travels through light sources to our eyes or from light sources to objects and then to our eyes.  I can use the idea that light travels in straight lines to show why shadows are the same shape as the objects that cast them.
Working Scientifically						I can look for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.			I can use my knowledge of light travelling in a straight line for a real-life purpose eg making a periscope, positioning a rear view mirror on a car.  I can investigate the relationship between light sources, objects and shadows.  I can extend my experience of light by looking at natural phenomena such as rainbows, objects looking bent in water, colours on soap bubbles.

Forces and Magnets	 					
ruices allu ividgilets	I can explore and talk about		I can see that some forces		I can recognise that some	
	different forces I can feel		need contact between two		mechanisms, including	
					I II I	
			objects, but magnetic		levers, pulleys and gears	
	I can understand some		forces can act at a		allow a smaller force to	
			distance.		have a greater effect.	
	important processes and				g,,	
	changes					
			I can observe how magnets		I can identify the effects	
			attract and repel each		of air resistance, water	
			other and attract some		resistance and friction	
			materials and not others.		that act between moving	
					surfaces.	
			I can compare and group			
			some materials on the		I can explain that	
			basis of whether they are		unsupported objects fall	
			attracted to a magnet and		towards the earth because	
			identify some magnetic		of the force of gravity	
			materials.		acting between the earth	
			marerials.		acting between the earth	
					and the falling object.	
			I can describe magnets as			
			having two poles.			
			I can predict whether two			
			magnets will attract or			
			repel each other			
			depending on which poles			
			are facing.			
			I can compare how things			
			move on different			
			surfaces.			
Working			I can compare how		I can explore how	
Scientifically			different things move and		different materials fall	
			group them.		and make parachutes of	
			3p		different designs to carry	
			_			
			I can raise questions and		out fair tests to see which	
			carry out tests to find out		are most effective.	
					u. oo. o, , ooo.	
			how far things move on			
			different surfaces.		I can explore resistance in	
					water eg making boats of	
			I can gather and record		different designs.	
			data to find answers to my			
			questions.			
			questions.			
			I can explore the			
			I cult explore the			
			strengths of different			
			strengths of different magnets and find a fair			
			strengths of different magnets and find a fair			
			strengths of different			
			strengths of different magnets and find a fair way to compare them.			
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			strengths of different magnets and find a fair way to compare them.  I can identify how the properties of magnets make them useful in everyday items and suggest creative uses for			
Council			strengths of different magnets and find a fair way to compare them.  I can identify how the properties of magnets make them useful in everyday items and	T oon idouble, how		
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Sound			strengths of different magnets and find a fair way to compare them.  I can identify how the properties of magnets make them useful in everyday items and suggest creative uses for	are made and show that some of them are linked to vibrations.  I can recognise that vibrations from sounds travel through a medium to the ear.  I can find patterns		
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Los fried partners   Levenum the volume of a sound and the strength of victorious that produced in   I can receptise that account get family on the sounds that or ends by a sound get family on the sounds get family on the sounds that or ends by a sound get family on the sounds get family o	A second						
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Sound get feature as the distance from the source increases.  I con find patterns in the control of the control					I can recognise that		
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I can investigate a variety of materials to investigate which provides the best insulation against sound.  I can construct and draw we simple series electrical brightness of a lamp or a business series electrical brightness of a lamp or a the volume and circuit which includes cells, wires, bulbs, switches and buzzers.  I can predict if a lamp will light or not in a simple series circuit to see incruit based on whether or not the lamp is part of a complete loop with a bottery.  I can recognise that a switch agents and the surface and the surface of the surface and buzzers and the output of the surface and buzzers and the control of the surface and the surface and the surface and the surface and closes a surface and closes a control of the surface and close a control of the surface and close and close a control of the surface and close and close a							
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common materials are					<b>T</b>		
conductors and some are							
insulators and can explain							
that metals are							
conductors.							
Working I can observe patterns eg I can systematically							I can systematically
Scientifically that bulbs get brighter if identify the effect of	Scientifically						
more cells are added, that changing one component in							changing one component in
metals tend to be a circuit.							a circuit.
conductors of electricity,							
that some materials can I can use my knowledge of					that some materials can		I can use my knowledge of
and can't conduct electricity for application							electricity for application
							in the real world eg make a
a circuit. set of traffic lights, a							
burglar alarm, or other							
useful circuit.							useful circuit
Earth and Space I can describe the	Farth and Space					T can describe the	2574. 5.1 5411.
movement of the earth	Lai tii aiiu Spate						
and other planets relative							
to the sun in the solar						to the gur in the salar	
						to the sun in the solar	
system.						a about	

				I can describe the movement of the moon relative to the earth.	
				I can describe the sun, earth and moon as approximately spherical bodies.	
				I can explain day and night and the apparent movement of the sun across the sky using the	
				idea of the earth's rotation.	
Working Scientifically				I can compare the time of day at different places on Earth.	
				I can create a simple model of the solar system.	
				I can create a simple shadow clock or sundial.	
				I can research why some people think structures as Stonehenge were used as astronomical clocks.	