### **Progression of Skills – Science**

### **KS1 – National Curriculum Statutory Requirements**

(Assessment Framework 'Pupil can' statements are denoted by A.F)

#### **Working Scientifically**

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

### **YEAR 1/2**

			(National (	Curriculum Statutory Requirements)			
		BIOLOGY	CHEM	IISTRY	PHYSICS		
Pla	Plants Animals, ir		nimals, including humans  Living things and their habitats		Everyday materi	Seasonal changes	
Year 1	Year 2	Year 1	Year 2	Year 2	Year 1	Year 2	Year 1
Pupils should be taught to:	Pupils should be taught to:	-describe and compare the	Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to:
-identify and name a variety of common wild and garden plants, including deciduous and	-observe and describe how seeds and bulbs grow into mature plants A.F. – describe	structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) A.F describe and	notice that animals, including humans, have offspring which grow into adults THIS	explore and compare the differences between things that are living, dead, and things that have never been alive A.F identify whether things are alive,	-distinguish between an object and the material from which it is made A.F use their knowledge and understanding of the properties of materials,	-identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and	-observe changes across the four seasons
evergreen trees  -identify and describe the basic structure of a	the main changes as seeds and bulbs grow into mature plants	compare the observable features of animals from a range of groups	OBJECTIVE IS COVERED WITHIN THE PSHE TOPICS IN CYCLE B TERM 6 A.F.	dead or have never lived.  -identify that most living things live in habitats to which they are	to distinguish objects from materials  -identify and name a variety of	cardboard for particular uses  A.F compare the suitability of materials for different uses.	-observe and describe weather associated with the seasons and how day length varies.
variety of common flowering plants, including trees.  Pupils might work scientifically by:  Observing closely, perhaps using magnifying glasses.	-find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. A.F describe basic needs of plants for survival and the impact of changing these Pupils should be taught to:	-identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense A.F name and locate parts of the human body, including those related to the senses  Animals: Humans:	- describe the main changes as young animals, including humans, grow into adults  find out about and describe the basic needs of animals, including humans, for survival (water, food and air) A.F	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 identify and name a variety of plants and animals in their habitats, including microhabitats A.F name different plants and animals and describe how they are suited to different habitats	everyday materials, including wood, plastic, glass, metal, water, and rock A.F identify materials  -describe the simple physical properties of a variety of everyday materials  -compare and group together a variety of everyday materials on	-find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.  Pupils should be taught to:  Identify and compare the suitability of a variety of	A.F describe seasonal changes  Pupils should be taught to:  Observe changes across the four seasons.  Observe and describe weather

- Comparing and contrasting familiar plants.
- Describing how they were able to identify and group them, and
- Drawing diagrams showing the parts of different plants including trees.
- Keeping records of how plants have changed over time, for example the leaves falling off trees and buds opening.
- Comparing and contrasting what they have found out about different 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 are living and eventually die

# Pupils might work scientifically by:

- Observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or
- Observing similar plants at different stages of growth;
   Setting up a comparative test to show that plants need light and water to stay healthy.

Pupils should be taught to:

- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
- Recognise that humans are animals.
- Compare and describe differences in their own features (eye, hair, skin colour, etc.).
- Recognise that humans have many similarities

# Pupils might work scientifically by using their observations to:

 Compare and contrast animals (humans) at first hand or through videos and photographs.

Using their senses to compare different textures, sounds and smells.

Animals, other animals:

Pupils should be taught to:

#### describe the basic needs of animals for survival

describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. A.F. - describe the importance of exercise, balanced diet and hygiene for humans

Pupils should be taught to:

- Notice that animals, have offspring which grow into adults.
- Find out about and describe the basic needs of animals, for survival (water, food and air).

# Pupils might work scientifically by:

 Observing, through video or first-hand observation and measurement, how different animals grow;
 Asking questions about what things animals need for 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. A.F. - describe how animals get their food from other animals and/or from plants, and use simple food chains to describe these relationships

Pupils should be taught to:

- 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.
- Identify and name a variety of plants and animals in their habitats, including micro-habitats.
- 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.
- Different kinds of plants and animals live in different kinds of places.

the basis of their simple physical properties.

Pupils should be taught to:

- 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.

# Pupils might work scientifically by:

- performing simple tests to explore questions, for example:
- 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'

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
- Some materials can be found naturally; others have to be made

# Pupils might work scientifically by:

- Comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs);
- Observing closely,
- Identifying and classifying the uses of different materials, and
- Recording their observations.
   Thinking about unusual and creative uses for everyday materials.

associated with the seasons and how day length varies.

# Pupils might work scientifically by:

- Making tables and charts about the weather and
- Making displays of what happens in the world around them, including day length, as the seasons change.

Additional suggestion from Lancashire for working scientifically opportunities which enhance learning and support using ICT across the curriculum

This unit provides an ideal opportunity for using data logging equipment to record temperatures

Identify and name a	survival	There are different kinds of		
variety of common	suggesting ways	habitat near school which		
animals including fish,	to find answers to	need to be cared for		
amphibians, reptiles,	their questions.	<ul> <li>Habitats provide the</li> </ul>		
birds and mammals.		preferred conditions for the		
Identify and name a	Pupils should be	animals/plants that live		
variety of common	taught to:	there (compare local		
animals that are	Notice that	habitats and less familiar		
carnivores, herbivores	humans, have	examples).		
and omnivores.	offspring which			
<ul><li>Describe and</li></ul>	grow into adults.	Pupils might work		
compare the	Find out about	scientifically by:		
structure of a variety	and describe the	<ul><li>Sorting and classifying</li></ul>		
of common animals	basic needs of	things as to whether they		
(fish, amphibians,	humans, for	are living, dead or were		
reptiles, birds and	survival (water,	never alive.		
mammals, and	food and air).	Recording their findings		
including pets).	Describe the	using charts		
Find out and describe	importance for	<ul><li>Describing how they</li></ul>		
how animals look	humans of	decided where to place		
different to one	exercise, eating	things,		
	the right	Exploring questions such as:		
another.	amounts of	'Is a flame alive? Is a		
<ul> <li>Group together</li> </ul>	different types	deciduous tree dead in		
animals according to	of food, and	winter?'		
their different	hygiene.	Talking about ways of		
features.	<ul> <li>Medicines can</li> </ul>	answering their questions.		
Recognise similarities	be useful when	<ul> <li>Constructing a simple food</li> </ul>		
between animals:	we are ill.	chain that includes humans		
- Structure: head,	Medicines can	(e.g. grass, cow, human);		
body, way of	be harmful if not	<ul><li>Describing the conditions in</li></ul>		
moving, senses,	used properly.	different habitats and micro-		
body covering, tail.		habitats (under log, on stony		
Animals have senses	<b>Pupils might</b>	path, under bushes);		
to explore the world	work	Finding out how the		
around them and to	scientifically by:	conditions affect the number		
help them to survive.	<ul><li>Observing,</li></ul>	and type(s) of plants and		
Recognise that	through video or	animals that live there.		
animals need to be	first-hand			
treated with care and				

#### **LKS2 – National Curriculum Statutory Requirements**

### (Assessment Framework 'Pupil can' statements are denoted by A.F)

#### **Working Scientifically**

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings

	YEAR 3/4								
	(National Curriculum Statutory Requirements)								
	BIOLO	GY		CHEN	ЛISTRY		PHY	'SICS	
Plants	Living things	Animals, inc	luding humans	Rocks	States of	Light	Sound	Forces and	Electricity
	and their				Matter			Magnets	
	habitats								
Year 3	Year 4	Year 3	Year 4	Year 3	Year 4	Year 3	Year 4	Year 3	Year 4
Pupils should be taught to:	Pupils should be	Pupils should be	<mark>Pupils should be</mark>	Pupils should be	<mark>Pupils should be</mark>	Pupils should	Pupils should be	Pupils should be	Pupils should be
	taught to:	taught to:	taught to:	taught to:	taught to:	be taught to:	taught to:	taught to:	taught to:
-identify and describe the									
functions of different parts	-recognise that	-identify that	-describe the simple	-compare and group	-compare and group	-recognise	-identify how	-compare how	<mark>-identify</mark>
of flowering plants: roots,	living things can be	animals, including	functions of the basic	together different	materials together,	that they	sounds are made,	things move on	common
stem/trunk, leaves and	grouped in a variety	humans, need the	parts of the digestive	kinds of rocks on	according to whether	<mark>need light in</mark>	associating some	<mark>different</mark>	appliances that
flowers	of ways	right types and	system in humans	the basis of their	they are solids, liquids	<mark>order to see</mark>	<mark>of them with</mark>	surfaces	<mark>run on</mark>
		<mark>amount of</mark>		<mark>appearance and</mark>	or gases	things and	something		electricity
-explore the requirements	-explore and use	nutrition, and that	-identify the different	<mark>simple physical</mark>		<mark>that dark is</mark>	vibrating vibrating	-notice that	
of plants for life and	classification keys to	they cannot make	types of teeth in	properties	-observe that some	the absence		some forces	-construct a
growth (air, light, water,	help group, identify	their own food;	<mark>humans and their</mark>		materials change state	<mark>of light</mark>	-recognise that	need contact	<mark>simple series</mark>
nutrients from soil, and	and name a variety	they get nutrition	simple functions	-describe in simple	when they are heated		vibrations from	<mark>between two</mark>	electrical circuit,
room to grow) and how	of living things in	from what they		terms how fossils	or cooled, and	-notice that	sounds travel	objects, but	identifying and
they vary from plant to	their local and wider	<mark>eat</mark>	-construct and	are formed when	measure or research	<mark>light is</mark>	<mark>through a</mark>	magnetic forces	naming its basic
<mark>plant</mark>	<u>environment</u>		interpret a variety of	things that have	the temperature at	<mark>reflected</mark>	<mark>medium to the</mark>	<mark>can act at a</mark>	parts, including
		-identify that	<mark>food chains,</mark>	lived are trapped	which this happens in	from surfaces	<mark>ear</mark>	<mark>distance</mark>	<mark>cells, wires,</mark>
-investigate the way in	-recognise that	humans and some	identifying producers,	within rock	degrees Celsius (°C)				<mark>bulbs, switches</mark>
which water is transported	environments can	other animals	predators and prey.			-recognise	-find patterns	-observe how	and buzzers
within plants	change and that this	have skeletons				that light	between the pitch	magnets attract	

-explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Pupils should be taught to:

- 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.
- Roots grow downwards and anchor the plant.

can sometimes pose dangers to living things

Pupils should be taught to:

- 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 sometimes pose dangers to living things.
- Use and make identification keys for plants and animals.

### **Pupils might** work scientifically by:

Using and making simple guides or keys [sorting, grouping, comparing,

and muscles for support, protection and movement

Animals (health and nutrition):

Pupils should be taught to:

- 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. An adequate and varied diet is beneficial to health (along with a good supply of air and clean
- water). Regular and varied exercise from a variety of different activities is

Animals (teeth, eating and digestion):

Pupils should be taught to:

- 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 prev.
- Describe how teeth and gums have to be cared for in order to keep them healthy.

### **Pupils might work** scientifically by:

- Comparing the teeth of carnivores and herbivores.
- Suggesting reasons for differences.

-recognise that soils are made from rocks and organic matter.

Pupils should be taught to: Compare and

- aroup 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.
- Rocks and soils can feel and look different.
- Rocks and soils can be different in different places/environ ments.

identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

Pupils should be taught to:

- 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.
- Solids, liquids and gases can be identified by their observable properties.

from the sun can be dangerous and that there are ways to protect their <mark>eyes</mark>

-recognise that shadows are formed when the light from a light source is blocked by an <mark>opaque</mark> <mark>object</mark>

-find patterns in the way that the size of shadows change.

**Pupils** should be taught to: Recognise that they need light in order to see things and that dark is the

absence of light. Notice that light reflected from

surfaces.

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.

Pupils should be taught to: Vibrations 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 volume of a sound and the strength of the vibrations that produced it.

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

materials

-describe magnets as having two poles

- -predict whether two magnets will attract or repel each other, depending on which poles are facing.
  - Pupils should be taught to: Compare
  - how some things move on different surfaces.
  - Notice that some forces need contact

-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 identify some **magnetic** 

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** 

Pupils should be taught to:

- Identify common appliances that run on electricity. Construct a
- simple series electrical circuit. identifying and naming its basic

roots, goes up the stem to the leaves, flowers and fruit.				T	Table 1					
stem to the leaves, flowers and fruit. *Nutrients fort food are taken in through the roots. Sorting, support and enable the plant to grow morparing, classifying to towards the light. *Plants make their own food in the leaves using energy from the sun. *Plants make their own food in the leaves using energy from the sun savering questions based. *Powers attract insects to aid pollination. *Pollination is when pollen is transferred between plants unimals. *Plants they have researched. *Fertilisation occurs in the owary of the filower. *Seeds are formed as a result of fertilisation. *Many flowers produce fruits which protect the seed and/or aid seed dispersal. *Seed dispersal. *Data on energy in after them. *Drawing and discussing their informed discussing their informed discussing their informed discussing their information discussion their information discussion their informa	<ul> <li>Water, taken in by the roots, goes up the</li> </ul>	classifying] to explore and	beneficial to health (focus	<ul> <li>Finding out what damages teeth</li> </ul>	Notes and Guidance (non-	<ul> <li>Solids have a fixed size and shape (the</li> </ul>	<ul> <li>Recognise that light</li> </ul>	<ul> <li>Recognise that sounds get</li> </ul>	between two objects	parts, including
Rowers and fruit   Nutrients (not food) animals.   animals.   out. Include information on making are taken in through the roots.   Stems provide support and enable the plant to grow to towards the light.   Plants make their own food in the leaves using energy from the sun.   *Raising and beyone plants to the container in which they are put.   by some plants to the container in which they are put.   by some plants to the container in which they are put.   by some plants that the diets of different down flower researched.   Policial ways of grouping different towary of the flower.   *Seeds are formed as a result of fertilisation.   *Amy flowers   Portical the seed and/or aid seed dispersal, by a variety of methods, helps ensure that new plants survive.   **Polisin sheed out of the plants o		•	,		•	size and shape can		fainter as the	,	cells, wires,
- Nutrients (not food) are taken in through the roots. Sorting, grouping, classifying to towards the light. Plants make their own food in the leaves using energy from the sun. Pollination is when pollen is transferred between plants by insects, birds, other animals and the wind Fertilisation occurs in the ovary of the flower or searched Fertilisation occurs in the ovary of the flower or saimals and the wind Fertilisation occurs in the ovary of the flower researched Seed dispersal, by a variety of methods, helps ensure that new plants turvive Plants need nutrients - Seed dispersal, by a variety of methods, helps ensure that new plants turvive Plants need nutrients to grow healthly - Plants need nutrients to grow healthly - Solids reflect the action). In geography, pupils should dux pupils should adsour the digestive system. Comparing these support and enable the plant to grow prouping, classifying to towards the light Plants make their on their observations of a siling and a sanswering questions based on their observations of a siling and a sanswering questions based on their observations of a siling and sanswering questions based on their observations of a siling pupils should dux about other and sanswering questions based on their observations of the container in which work scientifically by: - Observitions when pollen is transferred between plants that they have insert the cation, explored dates the shape of the container in the dates the shape of the container in the liquids can good and data take the shape of the container in the liquids can good and that displayed and the displayed and the displayed and that displayed and the shape of the container in th	· ·	,	3,		The second secon	•		distance from		
are taken in through the roots.  * Stems provide support and enable the plants to grow towards the light.  * Plants make their own food in the leaves using energy from the sun.  * Formers attract insects to aid poliniation.  * Pollination is when pollen is transferred between plants by insects, birds, other animals and the reaser found out about other flower.  * Seed sare formed as a result of fertilisation.  * Many flowers produce fruits which protect the seed and/or aid seed dispersal.  * Researching and out to flertilisation.  * Many flowers plants survive.  * Palas need nutrients to grow has the seed of any provide support and take the shape of the coars of the plant to the state of the plant to the seed and/or aid seed dispersal.  * Palas the plant to grow towards the light.  * Pollination is when pollen is transferred between plants by insects, birds, other animals that they have researched.  * Flowers attract insects to aid pollination.  * Fertilisation occurs in the orary of the flower.  * Seed sare formed as a result of fertilisation.  * Amy flowers  * Seed sare formed as a result of fertilisation.  * Amy flowers  * Seed sare formed as a result of fertilisation.  * Amy flowers  * Seed sare formed as a result of fertilisation.  * Amy flowers  * Seed sare formed as a result of fertilisation.  * Amy flowers  * Seed sare formed as a result of fertilisation.  * Amy flowers  * Seed sare formed as a result of fertilisation.  * Many flowers  * Seed sare formed as a result of fertilisation.  * Many flowers  * Seed sare formed as a result of fertilisation.  * Many flowers  * Seed sare formed as a result of fertilisation.  * Many flowers  * Seed sare formed as a result of fertilisation.  * Amy flowers  * Seed sare formed as a result of fertilisation.  * Amy flowers  * Seed sare formed as a result of fertilisation.  * Many flowers  * Seed sare formed as a result of fertilisation.  * Many flowers  * Seed sare formed as a result of fertilisation.  * Pollination is		' '	3,			_		the sound	_	switches and
Stems provide support and enable the plant to grow classifying) to towards the light.  **Plants make their own food in the leaves using energy from the sun.  **Pollination is when pollien is transferred between plants by insects, birds, other animals and the wind.  **Formation occurs in the owary of the flower:  **Seed ser formed as a result of fertilisation.  **Amy flowers a produce frist which pare produce frist which protect the seed and/or aid seed dispersal.  **Seed dispersal.  **Seed dispersal. by a variety of methods, helps ensure that new plants survive.  **Plants need nutrients to qow healthilly.  **Plants need nutrients to qow healthilly.  **Designing mend the wind.  **Stems provide dispersal that dispersal the container in what they find out the flower:  **Stems provide support and enable the plant to grow pound in the dieas of things of the dieas of the container in which they are with models or images.  **United so frocks and soils, so the including those in the local or a pile.  **Sounds can be there are the there are ways to providet the container in which they are put.  **Sounds and be there oways to providet ways (pulck, bang, their eyes. Sounds and be not a pop or a pool to a pile.  **Sounds and be there or a variety of waster of the container in which they are work scientifically by:  **Sounds and be there or a variety of waster of the container in which they are put.  **Sounds and be three or and take the shape of the container in which they are unterliable of the container in which they are reliquis but a made of the container in which they are put.  **Sounds and be distance.  **Sounds and be direct or ways (pulck, bang, their eyes.  **Recognise of the container in which the and pour as if they were flouds when the local enverigation of a complete of the container in which the vary in the container in which they are put.  **Sounds and the wind.** and that an witch and the wark work scientifically by:  **Sounds and the wind.** and that an witch the container in which they are put.  **Georgie	, ,				3 3 , ,	after the action).		source		buzzers.
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flower.  Seeds are formed as a result of fertilisation.  Many flowers produce fruits which protect the seed and/or aid seed dispersal.  Seed dispersal, by a variety of methods, helps ensure that new plants survive.  Plants need nutrients to grow healthily  changed over time.  Lusing a hand lens or microscope to help them.  Identify and classify rocks according to what they find out  changed over time.  Squeezing/pressur e.  Liquids and gases can flow.  Liquids and gases can flow.  Pupils might work scientifically by:  according to what the way that the size of shadows change.  Find patterns in the way that the size of shadows change.  Find patterns in the tway that the size of shadows change.  Find patterns in the way that the size of shadows change.  Find patterns in the way that the way that the size of shadows change.  Find patterns in the way that the size of shadows change.  Find patterns in the way that the size of shadows change.  Find patterns in the way that the size of shadows change.  Find patterns in the way that the way that the size of shadows change.  Find patterns in the way that the size of shadows change.  Find patterns in the way that the size of shadows change.  Find patterns in the way that the size of shadows change.  Find patterns in the way that the the size of shadows change.  Find patterns in the way that the the size of shadows change.  Find patterns in the way that the the size of shadows change.  Find patterns in the way that the the size of shadows change.  Fecognies some magnet and identify some classifying a variety of different materials.  Fecognies some magnetic materials.  Sounds can be high or low pitched.  Find patterns in the way that the size of shadows change.  Fecognies some magnetic materials.  Fecognies some features of the object that work scientificall by by:  Find patterns in the way that the size of shadows change.  Fecognies some features of the object that work scientificall by by:  Formal patterns in the way that the size of shadows change.  Fecognies or cordina	-	researched.			_	smaller by	-	naked eye.		or not a lamp
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<ul> <li>Many flowers produce fruits which protect the seed and/or aid seed dispersal.</li> <li>Seed dispersal, by a variety of methods, helps ensure that new plants survive.</li> <li>Plants need nutrients to grow healthily</li> <li>Plants need nutrients to grow healthily</li> <li>Researching different food groups and how they have fossils in</li> <li>Lens or microscope to microscope to help them.</li> <li>Lens or microscope to microscope to help them.</li> <li>Lens or microscope to microscope to help them.</li> <li>Lens or microscope to help them.</li> <li>Lens or microscope to help them.</li> <li>Liquids and gases can flow.</li> <li>Pupils might work scientifically by:</li> <li>Grouping and classify rocks according to whether they have fossils in</li> <li>Liquids and gases can flow.</li> <li>Pupils might work scientifically by:</li> <li>Grouping and classify rocks object that produced it.</li> <li>Sounds can be high or low pitched.</li> <li>The pitch of a sound and features of the object that produced it.</li> <li>Sounds can be high or low pitched.</li> <li>The pitch of a sound can be altered.</li> <li>In a magnet, and identify some change.</li> <li>Recognise some oconductors and identify some change.</li> <li>Recognise some oconductors and identify some change.</li> <li>Recognise some oconductors and identify some change.</li> <li>Recognise and identify some change.</li> <li>Recognise and identify some object that produced it.</li> <li>Sounds can be high or low pitched.</li> <li>The pitch of a sound can be altered.</li> <li>Predict whether two</li> </ul>							,		,	simple series
Many flowers   different food groups and how they and dispersal.   Seed dispersal, by a variety of methods, helps ensure that new plants survive.   Plants need nutrients to grow healthily   Plants need nutrients to grow healthily   Plants need nutrients   Plants need nutrients to grow healthily   Pupils might work scientifically by:   Size of microscope to help them.   Pupils might work scientifically by:   Pupils might work scientifically by:   Pupils might work scientifically produced it.   Sounds can be high or low pitched.   Sounds can be high or low pitched.   The pitch of a sound can be altered.   Predict whether two   Pred			_					•		circuit.
produce truits which protect the seed and/or aid seed dispersal.  Seed dispersal, by a variety of methods, helps ensure that new plants survive.  Plants need nutrients to grow healthily  Identify and classify rocks according to whether they have fossils in to grow healthily  Identify and classify rocks according to whether they have fossils in produced it.  Sitadows change.  Fupils might work scientifically by:  Sound and features of the object that produced it.  Sounds can be high or low pitched.  Sound and features of the object that produced it.  Sounds can be high or low pitched.  The pitch of a sound and features of the object that produced it.  Sounds can be high or low pitched.  The pitch of a sound and features of the object that produced it.  Sounds can be high or low pitched.  The pitch of a sound can be altered.	,								<b>J</b> .	Recognise
protect the seed and/or aid seed dispersal.  Seed dispersal, by a variety of methods, helps ensure that new plants survive.  Plants need nutrients to grow healthily  Protect the seed and/or aid seed how they keep us healthy.  Designing meals based on what they find out  Describe materials.  Exploring the effect of temperature on substances such as chocolate, butter, to grow healthily  Describe materials.  Exploring the effect of temperature on substances such as chocolate, butter, to grow healthily  Describe materials.  Describe materials.  Describe magnetic materials.  Describe magnets as having two pitched.  The pitch of a sound can be altered.  Describe magnetic materials.  Describe magnets as having two poles.  Describe magnetic materials.  Describe magnetic materials.  Describe of temperature on substances such as chocolate, butter, graym (for grow patterns in altered.								•	1	some
and/or aid seed dispersal.  Seed dispersal, by a variety of methods, helps ensure that new plants survive.  Plants need nutrients to grow healthily  I dentify and classify rocks according to whether they have grains or to grow healthily  I dentify and classify rocks according to whether they have grains or crystals, and whether they have fossils in  I dentify and classifying a variety of different materials.  I dentify and classifying a variety of differen	'				·		change.			common
dispersal.  Seed dispersal, by a variety of methods, helps ensure that new plants survive.  Plants need nutrients to grow healthily  A seep us healthy.  Designing meals based on what they find out  Classify rocks according to whether they have grains or crystals, and whether they have fossils in  Classify rocks according to whether they have grains or crystals, and whether they have fossils in  Classify rocks according to whether they of different materials.  Exploring the effect of temperature on substances such as chocolate, butter, cream (for ream	-		,		,	1 3			_	conductors
variety of methods, helps ensure that new plants survive.  Plants need nutrients to grow healthily  Designing meals based on what they find out  Designing meals based on whether they have grains or crystals, and whether they have fossils in to grow healthily  Designing materials.  Exploring the effect of temperature on substances such as chocolate, butter, grown (for rorm (	-		•		,	, , ,		,		
helps ensure that new plants survive.  Plants need nutrients to grow healthily  helps ensure that new plants survive.  Plants need nutrients to grow healthily  helps ensure that new plants survive.  Plants need nutrients to grow healthily  helps ensure that new plants survive.  Exploring the effect of temperature on substances such as chocolate, butter, grown (for rough) in this or low pitched.  Scientificall y by:  Looking for patterns in altered.  High or low pitched.  The pitch of a sound can be altered.  Predict whether two			,							
plants survive.  Plants need nutrients to grow healthily  what they find out  what they find out  what they find out  of temperature on substances such as chocolate, butter, to grow healthily  of temperature on substances such as chocolate, butter, grown (for repertation).  The pitched.  The pitch of a sound can be altered.  Predict whether two	,				,			high or low		
Plants need nutrients to grow healthily out out substances such as chocolate, butter, to grow healthily have fossils in the plants survive.  **Intertable in the plants of a substances such as chocolate, butter, patterns in plants of a sound can be altered.  **Intertable in the plants of a sound can be altered.  **Predict conductors.**  **Predict whether two								•	_	
to grow healthily whether they have fossils in the form of the patterns in the	plants survive.		=		, ,				•	
to grow healthily nave tossis in cream for altered.	Plants need nutrients		out		1			sound can be		conductors.
	to grow healthily				have fossils in	cream (for	•	altered.		
(either naturally from them. them. them. what magnets will	(either naturally from				them.	,	what		magnets will	

the soil or from	Animals	Research and	food such as	happens to	• Pitch can be	attract or	• Electricity can
fertiliser added to	(Skeletons and	discuss the	chocolate crispy	shadows	altered either	repel each	be
soil).	Movement):	different kinds	cakes and ice-	when the	by changing	other,	dangerous.
		of living things	cream for a party).	light source	the material,	depending	<ul><li>Electricity</li></ul>
Pupils might work	Pupils should	whose fossils	<ul> <li>Researching the</li> </ul>	moves or	tension,	on which	sources can
scientifically by:	be taught to:	are found in	temperature at	the distance	thickness or	poles are	be mains or
	Identify that	sedimentary	which materials change state, for	between	length of vibrating	facing.	battery.
<ul><li>Comparing the effect</li></ul>	humans and	rock.	example, when	the light	objects or		<ul><li>Batteries</li></ul>
of different factors on	some other	Explore how	iron melts or when	source and	changing the	<b>Pupils might</b>	'push'
plant growth, for	animals have	fossils are	oxygen condenses	the object	length of a	work	electricity
example the amount	skeletons and	formed.	into a liquid.	changes.	vibrating air	scientifically	round a
of light, the amount	muscles for	<ul><li>Explore</li></ul>	<ul> <li>Observing and</li> </ul>		column.	by:	circuit and
of fertiliser;	support,	different soils.	recording				can make bulbs,
<ul><li>Discovering how</li></ul>	protection	Identify	evaporation over a		Muffling/blockin	<ul><li>Comparing</li></ul>	buids, buzzers and
seeds are formed by	and	similarities and	period of time,		g sounds Recognise that	how	motors work.
Observing the	movement.	differences	such as a puddle in		vibrations from	different	Faults in
different stages of	Identify	between them.	the playground or		sounds travel	things move	circuits can
plant cycles over a	animals	Investigate what	washing on a line.		through a	and	be found by
period of time;	(vertebrates)	happens when	• Investigating the		medium to the	grouping	methodically
Looking for patterns	which have a	rocks are	effect of		ear.	them.	testing
in the structure of	skeleton	rubbed	temperature on		Sounds are	Raising	connections.
fruits that relate to	which	together or	washing drying or		heard when	questions	Drawings,
how the seeds are	supports their	what changes	snowmen melting.  • Additional		they enter our	and carrying	photographs
dispersed.	body, aids	occur when	suggestion from		ears (although	out tests to	and diagrams
<ul><li>Observing how water</li></ul>	movement &	they are in	Lancashire for		the structure of	find out	can be used
is transported in	protects vital	water.	working		the ear is not	how far	to represent
plants, for example,	organs (be	Raise and answer	scientifically		important key	things move	circuits
by putting cut, white	able to name	questions about	opportunities		learning at this	on different	(although
carnations into	some of the	the way soils are	which enhance		age phase).	surfaces.	standard
coloured water.	vital organs).	formed.	learning and		• Sounds can	<ul><li>Gathering</li></ul>	symbols need not be
Observing how water	Identify		support using ICT.		travel through solids, liquids	and	introduced
travels up the stem to	animals		This unit provides		and air/gas by	recording	until UKS2).
the flowers.	without		an ideal		making the	data to find	diffit offse).
	internal		opportunity for		materials	answers to	<b>Pupils might</b>
	skeletons/bac		using data logging		vibrate.	their	work
	kbones		equipment to		Sound travel	questions.	scientifically
	(invertebrates)		detect/measure		can be reduced	Exploring	by:
	and describe		and compare		by changing	the	Observing
	how they		temperatures.		the material	strengths of	patterns, for
				Ì			example, that

	I		414-41	1.cc ·	la cella a care d
have adapted			that the	different	bulbs get
other ways to			vibrations	magnets	brighter if
support			travel through.	and finding	more cells are
themselves,			Sound travel	a fair way to	added, that
move &			can be	compare	metals tend to
protect their			blocked.	them.	be conductors
vital organs.			Describe and other	Sorting	of electricity, and that some
Know how the			Pupils might work	materials	materials can
skeletons of			scientifically by:	into those	and some
birds,			Finding	that are	cannot be used
mammals,			patterns in the	magnetic	to connect
fish,			sounds that are	and those	across a gap in
amphibians or			made by	that are not.	a circuit.
reptiles are			different	Looking for	a circuit.
similar			objects such as	patterns in	
(backbone,			saucepan lids	the way that	
ribs, skull,			of different	magnets	
bones used			sizes or elastic	behave in	
for			bands of	relation to	
movement)			different	each other	
and the			thicknesses.	and what	
differences in			They might	might affect	
their			make ear muffs	this, for	
skeletons.			from a variety	example,	
• Know that			of different	the strength	
muscles,			materials to	of the	
which are			investigate		
attached to			which provides	magnet or	
			the best	which pole	
the skeleton,			insulation	faces	
help animals			against sound.	another.	
move parts of			They could	Identifying	
their body.			make and play	how these	
Explore how			their own	properties	
humans grow			instruments by	make	
bigger as they			using what	magnets	
reach maturity			they have	useful in	
by making			found out	everyday	
comparisons			about pitch	items and	
linked to body			and volume.	suggesting	ļ

	1	I	1		1	
proportions				Additional	creative uses	1
and skeleton				suggestion from	for different	1
growth – e.g.				Lancashire for	magnets.	1
do people				working	_	1
with longer				scientifically		1
legs have				opportunities		1
longer arm				which enhance		1
spans?				learning and		1
Recognise				support using		1
that animals				ICT across the		1
are alive; they				curriculum		1
				This unit		1
move, feed,				provides an ideal		1
grow, use				opportunity for		1
their senses				using data		1
and .				logging		1
reproduce.				equipment to		1
				detect/measure		1
Pupils might				and compare		1
work				sounds.		<u>1</u> 
scientifically						1
by:						<b>1</b>
<ul><li>Identifying</li></ul>						1
and grouping						1
and grouping animals with						1
and without						1
skeletons.						1
						1
• Observing						1
and						1
comparing						1
their						1
movement.						1
<ul><li>Exploring</li></ul>						1
ideas about						1
what would						1
happen if						1
humans did						1
not have						1
skeletons.						1
<u> </u>						1

# <u>UKS2 – National Curriculum Statutory Requirements</u> (Assessment Framework 'Pupil can' statements are denoted by A.F)

#### **Working Scientifically**

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising, and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships, and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

				YEAR 5/6					
	(National Curriculum Statutory Requirements)								
		BIOLOGY			CHEMISTRY		PHY	SICS	
Living things an	d their habitats	Animals inc	luding humans	<b>Evolution and</b>	Properties and	Earth and	Light	Forces	Electricity
				Inheritance	changing of	Space			_
					materials	-			
Year 5	Year 6	Year 5	Year 6	Year 6	Year 5	Year 5	Year 6	Year 5	Year 6
Pupils should be	Pupils should be	<mark>Pupils should be</mark>	Pupils should be	<mark>Pupils should be</mark>	<mark>Pupils should be</mark>	<mark>Pupils should be</mark>	Pupils should be	Pupils should be	<mark>Pupils should be</mark>
taught to:	taught to:	taught to:	taught to:	taught to: -recognise that	taught to:	taught to:	taught to:	taught to:	taught to:
-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 Observing Life Cycles:	-describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals  -give reasons for classifying plants and animals based	-describe the changes as humans develop to old age.  Animals: Human Lifecycles:  Pupils should be taught to:  Describe the changes as humans develop to	-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	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	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	-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	-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 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	-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
Pupils should be	on specific	old age.	which nutrients and	identical to their	how to recover a	approximately		resistance and	function,
taught to:	characteristics.		water are transported	parents		spherical bodies		friction, that act	including the

- 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.

#### **Pupils might** work scientifically by:

- Observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric
- Asking pertinent questions.

times).

 Suggesting reasons for similarities & differences

**Environment-**Classification:

Pupils should be taught to:

Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences. including microorganisms, plants and

- animals. Give reasons for classifying plants and animals based on specific characteristics.
- Living things can be grouped into microorganisms, plants and animals.
- Vertebrates can be grouped as fish. amphibians, reptiles, birds and mammals.

Animals are alive; they move, feed,

grow, use their senses, reproduce, breathe/respir e and excrete.

### **Pupils might** work scientifically

- Researching the gestation periods other animals and comparing them with humans.
- By finding out and recording the length and mass of a baby as it grows.

#### within animals. including humans

Pupils should be taught to:

- 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.
- The heart is a major organ and is made of muscle
- The heart pumps blood around the body through vessels and this can be felt as a pulse.
- The heart pumps blood through the lungs in order

-identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Pupils should be taught to:

- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of vears 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

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 including changes associated with of soda.

Pupils should be

use the idea of the Earth's rotation to night and the <mark>apparent</mark> movement of

Pupils should be taught to:

the sun across

the sky.

not usually reversible, burning and the action of acid on bicarbonate

**Testing Material** Properties:

taught to:

Compare and group together explain day and

-use the idea that light Describe the travels in movement of the Earth, and other planets, relative to the Sun in

system. Describe the movement of the Moon relative to the Earth.

the solar

- Describe Sun/Earth/ Moon as approximate ly spherical bodies.
- Use the idea of the Earth's rotation to explain day
- and night. The Earth spins once

explain that we between see things because light travels from light sources to

our eyes or

from light

sources to

objects and

then to our

lines.

Use the idea

that light

travels in

straight

lines to

seen

because

they give

out or

explain that

objects are

eyes

-recognise that <mark>some</mark> mechanisms, pulleys and gears, allow a have a greater effect.

> Pupils should be taught to:

straight lines to explain why shadows have the same shape as the objects that cast them. the Earth Pupils should be taught to: aravity Recognise acting that light appears to travel in straight

> resistance, water resistance and friction. that act between movina surfaces.

Recognise

that some

mechanisms

brightness of moving surfaces

including levers. smaller force to

Explain that unsupporte d objects fall towards because of the force of between the Earth and the falling object. Identify the effects of air

bulbs, the loudness of buzzers and the on/off position of switches

-use recognised symbols when representing a simple circuit in

a diagram. Pupils should be taught to:

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, includina the brightness

of bulbs, the

loudness of

buzzers and

the on/off

- They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. Observe changes in an animal over a period of time (for example, by hatching and
- rearing chicks). Comparing how different animals reproduce and grow.

- Invertebrates can be grouped as snails and slugs, worms, spiders and insects
- Plants can be grouped as flowering plants (incl. trees and grasses) and non-flowering plants (such as ferns and mosses).

#### **Pupils might** work scientifically by:

- Using classification systems and keys.
- Identifying some animals and plants in the immediate environment. Researching unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.

- to obtain a supply of oxygen.
- Blood carries oxygen/essential materials to different parts of the body.
- During exercise muscles need more oxygen so the heart beats faster and our breathing and pulse rates increase.
- Animals are alive: they move, feed, grow, use their senses, reproduce, breathe/respire and excrete.
- An adequate, varied and balanced diet is needed to help us grow and repair our bodies (proteins), provide us with energy (fats and carbohydrates) and maintain good health (vitamins and minerals).
- Tobacco, alcohol and other 'drugs' can be harmful.

adaptation may lead to evolution

#### **Pupils might** work scientifically by:

- Observing and raising questions about local animals and how they are adapted to the environment.
- Comparing how some living things adapt to survive in extreme conditions, e.g. cactuses, penguins and camels.
- Analysing the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly

everyday around its materials on the own axis in basis of their 24 hours. properties, giving day including their and night.

hardness.

solubility,

transparency,

conductivity

(electrical and

thermal), and

response to

Give reasons.

of materials and

measure their

hardness.

strength,

flexibility,

solubility,

thermal

electrical

transparency,

conductivity,

conductivity).

Temperature and

Thermal Insulation:

magnets.

- The Earth orbits the Sun in one vear.
- We can see the Moon because the Sun's light reflects off
- based on it. The Moon evidence from orbits the comparative and fair tests, for the Earth in particular uses of approximate everyday ly 28 days materials, and including metals, changes to wood and plastic. Compare a variety appearance
- are evidence of this. effectiveness (e.g. The Sun appears to move across the sky from East to West and this causes shadows to change

during the

day.

of the moon

reflect light into the eye. Explain that we see things

because the

- light that travels from light sources to our eyes or from light sources to objects and
- then to our eyes. resistance. Use the idea water that light resistance, travels in magnetic straight forces, lines to gravity). explain why Gravity can shadows act without have the direct same shape contact
- **Pupils might** work scientifically by:

as the

objects that

cast them.

Deciding [observe/ex plore] where to place rear-view

- , including levers, pulleys and gears, allow a smaller force to
- have a representing greater a simple effect. circuit in a There are diagram. different Circuit types of diagrams forces can be used (push, pull, to construct friction, air a variety of

between the

Earth and an

object.

Friction, air

resistance

and water

resistance

are forces

which slow

down

movina

objects.

Friction, air

resistance

**Pupils might** work scientifically

position of

recognised

switches.

symbols

when

more

complex

circuits

whether

they will

'work'.

predictina

Use

Systematicall y identifying the effect of changing one [thing] component at a time in a circuit. Designing and making a set of traffic

lights, a

• All medicines are	coloured and	■ Heat always	<ul><li>Changes to</li></ul>	mirrors on	and water	burglar alarm
drugs, not all	scented flowers.	moves from hot	shadow	cars.	resistance	or some other
drugs are		to cold.	length over	Designing	can be	useful circuit.
medicines.		Some materials	a day or	and making	useful or	
		(insulators) are	changes to	a periscope	unwanted.	
<b>Pupils might work</b>		better at slowing	sunrise and	and using	The effects	
scientifically by:		down the	sunset times	the idea	of friction,	
Exploring the		movement of	over a year	that light	air	
work of scientists.		heat than others.	are evidence	appears to	resistance	
Scientific research		Objects/liquids	supporting	travel in	and water	
about the		will warm up or	the	straight	resistance	
relationship		cool down until	movement	lines to	can be	
between diet,		they reach the	of the Earth.	explain how	reduced or	
exercise, drugs,		temperature of		it works.	increased	
lifestyle and		their	<b>Pupils might</b>	Investigatin	for a	
health.		surroundings.	work	g the	preferred	
*Additional			scientifically	relationship	effect.	
suggestion beyond		<b>Pupils might work</b>	by:	between	More than	
NC2014 to support		scientifically by:	<ul><li>Comparing</li></ul>	light	one force	
pupils working		Carry out tests to	the time of	sources,	can act on	
scientifically and to		answer questions	day at	objects and	an object	
provide an		such as 'Which	different	shadows by	simultaneou	
opportunity to use		materials would	places on	using	sly (either	
ICT to		be the most	the Earth	shadow	reinforcing	
collect/interpret		effective for	through	puppets.	or opposing	
data		making a warm	internet	Extend their	each other).	
Observing/Measuri		jacket, for	links and	experience		
ng changes to		wrapping ice	direct	[explore and	Pupils might	
breathing,		cream to stop it	communicat	observe] of	work	
heartbeat and or		melting, or for	ion.	light by	scientifically	
pulse rates after		making blackout	<ul><li>Creating</li></ul>	looking at a	by:	
exercise.		curtains?'	simple	range of	Exploring	
		Compare materials	models of	phenomena	falling paper	
		in order to make a	the solar	including	cones or	
		switch in a circuit.	system.	rainbows,	cup-cake	
			<ul><li>Constructin</li></ul>	colours on	cases.	
		Material Changes	g simple	soap	Designing	
		(Reversable	shadow	bubbles,	and making	
		Changes):	clocks and	objects	[exploring] a	

sundials, looking variety of
<ul> <li>Know that some calibrated to bent in parachutes.</li> </ul>
materials will show water and Carrying out
dissolve in liquid midday and coloured fair tests to
to form a the start filters (they determine
solution, and and end of do not need which
describe how to the school to explain designs are
recover a day. why these the most
substance from a Finding out phenomena effective.
solution. why some occur). • Exploring
<ul> <li>Use knowledge of people think resistance in</li> </ul>
solids, liquids and that water by
gases to decide structures making and
how mixtures such as testing
might be Stonehenge boats of
separated, might have different
including through been used shapes.
filtering, sieving as • Design and
and evaporating. astronomica make
Demonstrate that   I clocks.   artefacts
dissolving, mixing that use
and changes of simple
state are levers,
reversible pulleys,
changes. gears
• Changes can and/or
occur when springs and
different materials explore their
are mixed.
Some material
changes can be
reversed and
some cannot.
Recognise that
dissolving is a
reversible change.
• Distinguish
between melting
and dissolving.

Mixtures of solids
(of different
particle size) can
be separated by
sieving.
Mixtures of solids
and liquids can be
separated by
filtering if the
solid is insoluble
(un-dissolved).
Evaporation helps
us separate
soluble materials
from water.
• Changes to
materials can
happen at
different rates
(factors affecting
dissolving, factors
affecting
evaporation –
amount of liquid,
temperature,
wind speed).
• Freezing, melting
and boiling
changes can be
reversed (revision
from YR4).
·
Material Changes
(Irreversible
Changes):
Pupils should be
taught to:
taught to.

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.
Pupils might work
scientifically by:
Observing and
comparing the
changes that take
place, for
example, when
burning different
materials or
baking bread or
cakes.
Researching and
discussing how
chemical changes
have an impact
on our lives, for
example cooking.
Discuss [research]
the creative use
of new materials
such as polymers,
super-sticky and
super-thin super-thin
materials.