<u>Science</u>

Intent: The science curriculum aims to ensure that all pupils develop substantive knowledge in the three disciplines of biology, chemistry and physics; an understanding of the nature, processes and methods of science; and are equipped to understand the uses and implications of science today and for the future.

In scie	n science, children are taught 'working scientifically skills'. They use these skills to answer questions, using the most appropriate type of 'scientific				
enquir	y.'				
	Working scientifically Years 3 and 4		Working scientifically Years 5 and 6		
1.	asking relevant questions and using different types of scientific enquiries	1.	planning different types of scientific enquiries to answer		
	to answer them		questions, including recognising and controlling variables		
2.	setting up simple practical enquiries, comparative and fair tests		where necessary		
3.	making systematic and careful observations and, where appropriate,	2.	taking measurements, using a range of scientific		
	taking accurate measurements using standard units, using a range of		equipment, with increasing accuracy and precision, taking		
_	equipment, including thermometers and data loggers	_	repeat readings when appropriate		
4.	gathering, recording, classifying and presenting data in a variety of ways to	3.	recording data and results of increasing complexity using		
_	help in answering questions		scientific diagrams and labels, classification keys, tables,		
5.	recording findings using simple scientific language, drawings, labelled	_	scatter graphs, bar and line graphs		
	diagrams, keys, bar charts, and tables	4.	using test results to make predictions to set up further		
6.	reporting on findings from enquiries, including oral and written	_	comparative and fair tests		
_	explanations, displays or presentations of results and conclusions	5.	reporting and presenting findings from enquiries, including		
7.	using results to draw simple conclusions, make predictions for new values,		conclusions, causal relationships and explanations of and		
	suggest improvements and raise further questions		degree of trust in results, in oral and written forms such as		
8.	identifying differences, similarities or changes related to simple scientific	-	displays and other presentations		
	ideas and processes	6.	identifying scientific evidence that has been used to		
9.	using straightforward scientific evidence to answer questions or to support		support or refute ideas or arguments.		
	their findings.	(1/20)			
	Scientific enquiry skills	s (KS2)			

O Some questio how living processes ch	bservation over time ns can be answered by observir things, materials and physical ange over time (minutes, hours weeks or months.)	Observation over Observing changes of time ranging fro	Observation over time Observing changes that occur over a period of time ranging from minutes to months.		
Com In a comparat changed is cat types of mater is being cha	parative and fair testing ive test, the variable that is bein regoric eg. The names of plants ials. In a fair test, the variable the inged is quantifiable eg. Can be ounted or measured.	ng or hat Changing one varia whilst keeping all o	Comparative / fair testing Changing one variable to see its effect on another, whilst keeping all others the same.		
Identifying, grouping and classifying Some questions can be answered by naming things or sorting them into groups.		Identifying, group Making observatio organise items.	Identifying, grouping and classifying Making observations to name, sort and organise items.		
Some question links between Some are ans	Pattern-seeking ns can be answered by looking f variables where there is no cau relationship. swered by carrying out a survey	Pattern-seeking Identifying patterns and looking for relationships in enquiries where variables are difficult to control.			
Research Some questio using first-ł practical reaso	ing using secondary sources ons cannot be answered by pupi nand experiences for ethical or ns and need to be answered us secondary sources.	Is Research Using secondary se	ources of information to answe s.	er 📀	
	Year 3	Year 4	Year 5	Year 6	
Autumn 1	Unit: Light Key Vocabulary:	Unit: Electricity Key Vocabulary:	Unit: Forces Key Vocabulary: Water resistance, air resistance, gravity, mass, Newton.	Unit: Electricity Key Vocabulary:	

 T			ette son all son all states to
Transparent, opaque, dark,	Appliance, bulb, buzzer, cell,		Filament, voltage, electrical
light, light source, reflect,	circuit, component, conductor,	Knowledge:	current, series circuit, parallel
shadow.	insulator, switch, wire.	 Gravity is a force that pulls 	circuit.
		objects towards the centre	
Knowledge:	Knowledge:	of the Earth.	
 Light enables us to see 	 Electricity is a form of energy 	 Friction occurs when two 	Knowledge:
things. Darkness is the	which can be converted into	objects move against each	Electricity can flow from one
absence of light.	heat, light in our homes and	other. It gives us grip which	place to another. This is
• The Sun is the most	school. It is useful to power	allows us to start and stop	called an electrical current.
important source of	appliances but can be very	moving.	We can control the
light for life on Earth.	dangerous.	• Air and water resistance are	movement of electricity by
Light from the Sun can	• An electrical circuit is a loop	forms of friction. Upthrust is	causing it to flow in a circuit.
be dangerous.	that allows electricity to travel	the force that can keep	• Voltage is the pressure that
• Light is reflected from	through it. An electrical circuit	objects afloat.	pushes electricity through a
surfaces.	must have wires and a cell.	• Objects with a large surface	circuit. Increasing the
• Light travels in straight	• A switch opens and closes a	area have greater air and	voltage in a circuit affects
lines. It can pass	circuit. Opening a circuit	water resistance that	how components function.
through transparent	prevents electricity from	objects with a smaller	• A switch makes a gap in a
materials, but cannot	flowing.	surface area.	circuit which prevents
pass through opaque	Materials that allow electricity	• Simple machines (pulleys,	electricity from flowing.
materials.	to flow through them are	levers and gears) can	Switches can be used for
• A shadow is created	called conductors.	increase the force applied to	safety reasons and to save
when an object blocks	 Materials that do not allow 	an object.	money.
the path of light.	electricity to flow through		Different components can
• If a light source is closer	them are called insulators.	Working scientifically	be used for different
to an object, the	 Many (but not all metals) 	1. Plan a fair test to explore the	purposes.
shadow appears larger.	conduct electricity.	effect of water resistance.	
		2. Measure time taken for	Working scientifically
Working scientifically	Working scientifically	'parachutes' made of different	1. Plan to test different
1. Ask and answer questions	9. Use scientific evidence to explain	materials to fall to the ground.	components, changing one
about how shadows are	patterns found (most metals	Repeat readings.	variable at a time.
formed.	conduct electricity).		

 3. Look for patterns in what happens to shadows when the light source moves, taking measurements of distance between light source and object. How does the distance of a light source from an object affect the size of the shadow produced? How does the distance of an object from a screen affect the size of the object's shadow? Key questions What is darkness? What is a light source and are they all safe? How does light travel? What is the difference between a transparent and an opaque object? What is a shadow and are they all the same size? Prior Knowledge: I can describe properties of materials. (Y1) Different materials are suitable for different uses. (Y2) 	 7. Draw conclusions and raise questions for other similar tests. 3. Making systematic observations. Is there a pattern between the material an object is made from and whether it conducts electricity or not? How long does a battery light a torch for? Key questions What is electricity and is it safe? What is an electrical circuit? Can we control the flow of electricity? What is the difference between a conductor and an insulator? Are metals good conductors? Prior Knowledge: Different materials are suitable for different uses. (Y2) 	 Which shape of parachute takes the longest to fall to the ground? Do all objects fall through water in the same way? Key questions What is gravity? What makes things slow down? Can we slow things that travel through the air? Can we slow things down that travel through water? Where can we see simple machines and what effect do they have? Prior Knowledge: Some forces are invisible such as magnetic fields. (Y3) Friction is a force between two surfaces. Rough surfaces create greater friction. Smooth surfaces create less friction. (Y3) 	 4. Use results to make predictions and set up further tests. How does the voltage of batteries in a circuit affect the brightness of a lamp? Does the temperature of a light bulb increase the longer it is on? Key questions What is the difference between an electrical circuit and an electrical circuit and an electrical current? What is voltage and how does it affect components in a circuit? Do we need switches in circuits? What variation can we see in the performance of different components? Prior Knowledge: Circuits allow electricity to travel through them. It must be closed for this to happen. (Y4) Conductors allow electricity to flow through them but insulators do not. (Y4)
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	Unit: Forces and magnets	Unit: Living things and their	Unit: Properties and changes of	Unit: Living things and their
		habitats (classification)	materials	habitats (common
	Key Vocabulary:			characteristics and micro-
	Attract, repel, force, friction,	Key Vocabulary:	Key Vocabulary:	organisms)
	magnet, magnetic pole.	Characteristic, classify, vertebrate,	Chemistry, dissolve, insoluble,	
		invertebrate, flowering plant, non-	soluble, reversible, irreversible.	Key Vocabulary:
	Knowledge:	flowering plant.		Biology, taxonomy, species,
	• A force is a push or a		Knowledge:	organism, micro-organism.
	pull. A force makes	Knowledge:	• Materials can be grouped by	
	something move,	• A vertebrate is an animal with	their properties. Materials	Knowledge:
	change speed, change	a backbone. An invertebrate is	are suited to purposes	 Living things are classified
	direction or change	an animal without a backbone.	based on them. Some	into five main kingdoms. The
	shape.	• Fish are cold-blooded	properties can be seen but	members of each kingdom
	• We can change the	vertebrates that live in water	others can be found by	share features that are
	amount of force that we	and have gills that help them	testing.	unique to that group. They
2 ۲	use when we push or	take oxygen from the water.	• Thermal conductivity means	are plants, animals, fungus,
Ĩ.	pull.	Amphibians are cold-blooded	that heat can be transferred	protist and monera.
utr	 Friction is a force 	vertebrates that live in water	through a material.	 Scientists use a microscope
4	between two surfaces.	and on land.	 A solution is a mixture of a 	to study protist and monera.
	Rough surfaces create	Reptiles are cold-blooded	solid in liquid where the	• Taxonomy is a way of
	greater friction. Smooth	vertebrates with scaly skin.	solid has broken into parts	classifying animals by
	surfaces create less	Birds are warm-blooded	too small to see. Dissolving	dividing them into groups.
	friction	vertebrates with feathers that	is a process where one	then into even smaller
	Magnetic materials are	can fly	substance becomes	groups
	attracted to a magnet	• Mammals are bairy warm	incorporated with another	 All organisms have a
	A magnet has two	Infamiliais are fially, waitin-	to form a solution	scientific name based on this
	• A magnet has two	broothe air	Some substances are	taxonomy
	North and South nois		soluble. Some are not	taxonomy.
		 Insects are invertebrates with 	Mixtures can be constand	Working scientifically
		six legs and three body parts.	• Witktures can be separated	6 Descarch classification
	Like poles repei.	Arachnids are invertebrates	using sieves, filters and	o. Research classification
	• Iviagnetic force is an	with eight legs and two body	magnets.	systems. Research scientific
	invisible push or pull	parts.	Dissolved solvents can be	evidence that suggests plants
			regained by evaporation.	

that can act from a	• Some plants produce flowers	Heating a solution up can	and animals belong within the
distance.	and seeds. Some produce no	speed up the process of	classification system.
	flowers and grow from spores.	evaporation.	3. Use classification keys.
Working scientifically 4. Gather and record data regarding how far things	• If an environment changes, this can threaten the things that live there.	 All changes are either reversible or irreversible. Dissolving a solid in a liquid is a reversible change. 	Who was Carl Linnaeus and what did he contribute to science?
move on different surfaces.	Working scientifically	Where burning has	Can you make a
1. Ask questions about the strength of magnets and find a way of testing them.	4. Use and make simple guides or keys to explore and identify local plants and animals.	occurred, the change is irreversible.	classification key for vertebrates/invertebrates or micro-organisms?
 9. Using scientific evidence to support findings. How do the properties of a surface affect how far an object will move on it? Does the size and shape of a magnet affect how strong it is? Key questions 	 9. Predict what might happen if an environment changes and explore scientific evidence to support this. 6. Report on findings from enquiries. Can you use a classification key to identify animals in the local and wider environment? How does the variety of plants and animals that we can see in our 	 Working scientifically 1. Plan comparative tests of conductivity and fair tests of solubility. 4. Use test results to set up similar tests, making predictions. How does a container of saltwater change over time? 	Key questions What is classification? What are the five main kingdoms of organisms and how are they different? What is taxonomy and how did Carl Linnaeus use it? How does classification help scientists?
What is a force and what does it do?	local environment change over the year?	based on whether they would be suitable for certain	Prior Knowledge:
What is friction? Can we increase or reduce it? Do all magnets have the same strength? Are all objects magnetic? How do the poles of a magnet behave?	Key questions What are vertebrates and invertebrates? How can we classify animals? What are the two main groups of plants?	purposes? Can you find whether or not a solid is a conductor? Can you find whether or not a solid is soluble?	I can describe characteristics of fish, birds, mammals, reptiles, amphibians, insects and arachnids. (Y4) I know that their life cycles are different. (Y5)
How is magnetic force different from other forces?		Key questions	

	Prior Knowledge: Forces such as bending and squashing can be applied to materials and objects. (Y2)	What can happen to plants and animals if their environment changes? Prior Knowledge: Many animals can be grouped into: fish, birds, mammals, reptiles, amphibians. (Y1) Plants and animals live in habitats to which they are suited. (Y2) Humans and some other animals have a skeleton for protection and support. (Y3)	What different ways can I find the properties of materials? Why are metals, wood and plastic good for certain purposes? How is a solution formed and is everything soluble? What is a mixture and how can it be separated? Are all changes reversible? How do chemists like Spencer Silver make new materials? Prior Knowledge: I can describe properties of materials. (Y1) Different materials are suitable for different uses. (Y2) There are three states of matter: solids, liquids and gases. (Y4) Evaporation, condensation and freezing are processes whereby water can change between the three states. (Y4)	I know that some plants reproduce sexually and others reproduce asexually. (Y5)
Spring 1	Unit: Plants Key Vocabulary: Nutrients, transpiration, pollination, germination, seed dispersal, botanist.	Unit: Sound Key Vocabulary: Medium, pitch, sound, vibration, volume.	Unit: Living things and their habitats Key Vocabulary:	Unit: Animals including humans (Circulatory system) Key Vocabulary:

	Knowledge:	Asexual reproduction, sexual	Atrium, artery, blood vessel,
Knowledge:	Sound is caused by a back and	reproduction, fertilisation, life	oxygenated, deoxygenated,
 Flowering plants all have roots, a stem or 	forth movement called vibration.	cycle, metamorphosis, offspring.	vein, ventricle.
trunk, leaves and	Sound waves move out from a	Knowledge:	Knowledge:
flowers, but do not all	vibrating object and into the	 Oak trees grow from acorns and become a babitat for 	 The heart pumps blood around the heady
Diants need air light	\sim Sound travels through the air	many animals. Squirrols are	The left strium and left
• Plants need air, light, water. nutrients from	and can travel through	mammals that can make	 The felt athum and felt ventricle carry oxygenated
soil and room to grow.	different types of medium.	their nests in oak trees, eat	blood which is pumped
But plants need	Loud sounds are made by big	acorns and reproduce.	around the body.
differing amounts of	vibrations.	These are examples of local	• The right atrium and right
things in order to thrive.	Quiet sounds are made by	plants and animals that are	ventricle carry
Water moves from the	small vibrations.	interconnected.	deoxygenated blood which
root of a plant upwards	When different objects vibrate they can create a high or low	Different types of animals have different life guales	is pumped out to the lungs.
Via the stem.	nitch	A mammal is born live and	 Blood Vessels, called artorics, carry, ovygenated
 Plants absorb water from the soil to belo 	 Sounds get fainter as the 	grows into a mature adult	blood away from the heart
them live and grow.	distance from the sound	 Most amphibians hatch 	Blood vessels, called veins.
 Plants with larger root 	source increases.	from eggs underwater	carry deoxygenated blood
systems can take more		before undergoing	back to the heart to be
water from the soil.	Working scientifically	metamorphosis.	pumped back to the lungs.
 Flowering plants can 	1. Ask questions about the sounds	 Many insects lay eggs that 	• When we exercise, the heart
only produce seeds if	and find answers to them	hatch into larvae. These	pumps faster so that more
pollen is transferred	2. Set up a practical enquiry to see	look very different from the	oxygen is carried around the
stigma	which materials are the best	metamorphosis	 Some drugs can make the
 Plants spread their 	insulators of sound using	Birds hatch from eggs	heart pump too fast or too
seeds in different wavs	dataloggers to measure sound.	 Most plants reproduce 	slow, which can lead to poor
– wind, animals, gravity.	How does the length of a	when a male and female cell	health.
	tuning fork/guitar string affect the	are combined to make a	Working scientifically
Working scientifically	pitch of the sound?	seed.	6. Explore scientific research
	'	 Some plants reproduce 	relevant to the relationship

 2. Compare the effect of different factors on plant growth. 3. Observe how water is transported in plants. 5. Recording findings using labelled diagrams. What are the conditions that help a seed to germinate faster? What happens to celery when it is left in a glass of coloured water? Key questions What do all flowering plants have in common? Do all plants need the same things in order to survive? How does water move through a plant? Why is pollination important? How do plants disperse their seeds? Prior Knowledge: I can find the root. 	What is the relationship between the volume of a sound and the strength of vibrations it produces? Key questions How are sound waves made? How do sound waves travel? What is volume and can we change it? What is pitch and can we change it? How does distance from the source affect how we hear sound? Prior Knowledge: I can describe properties of materials. (Y1) Different materials are suitable for different uses. (Y2)	asexually. This means fertilisation does not take place. Working scientifically 5. Compare life cycles of plants and animals in local environment with other plants and animals around the world. Then present findings. 3. Grow new plants from a different part of the parent plant and record findings in different ways. What is the same and what is different between the life cycles of an insect and a mammal? How does a potato change as it asexually reproduces? Key questions How are living things near me interconnected? How are animals' life cycles different? What did Jane Goodall contribute to science?	between diet, exercise, drugs, lifestyle and health. 5. Presentation on how the circulatory system works. Which organs of the body make up the circulatory system? How does the length of time we exercise for affect our heart rate? What scientific research can I use to make healthy lifestyle choices? Key questions What is the purpose of blood and how does it move around the body? Is the left side of the heart exactly the same as the right? What is the difference between a vein and an artery? Can humans alter their heart rate? How does my lifestyle affect how my heart functions? Prior Knowledge:
I can find the root, stem, leaf and flower of a plant. (Y1) Plants need water, light and a suitable		contribute to science? What is the difference between sexual and asexual reproduction in plants?	Mammals have lungs to help them breathe air. (Y4) The heart is an involuntary muscle. (Y3)

	temperature to grow		Why is it important for children	I can describe the basic function
	and stay healthy. (Y2)		in Leicester to study the work of	of the digestive system. (Y4)
			David Attenborough?	
			_	
			Prior Knowledge:	
			I can describe characteristics of	
			fish birds mammals rontilos	
			nsn, bilds, mannais, reptiles,	
			amphibians, insects and	
			arachnids. (Y4)	
			I know that some plants	
			produce and grow from seeds,	
			while others produce no seeds	
			and grow from spores. (Y4)	
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	Unit: Animals, including	Unit: Animals including humans	Unit: Animals, including humans	Unit: Evolution and Inheritance
	humans (nutrition and	(Digestion and teeth)		
	skeletons)		Key Vocabulary:	Key Vocabulary:
	,	Key Vocabulary:	Adolescence, foetus, gestation,	Adaptation, characteristics,
	Key Vocabulary:	Digestion, plaque, saliva, food	puberty, hormone.	natural selection, evolution,
_	Voluntary musclos	chain, producer, predator, prey.		extinct, inheritance.
L D	voluntary muscles,		Knowledge:	
Ĕ	involuntary muscles,	Knowledge:	Humans have a gestation	Knowledge:
μ	skeleton, joint, nutrition.	There are different types of	period of nine months.	 Living things have changed
S		teeth. Incisors cut. canines	Different mammals have	over time. Fossils are the
	Knowledge:	tear, molars grind food.	different gestation periods	remains of organisms that
	Muscles help us to	 Humans have teeth for ripping 	Human babies need	lived millions of years ago
	move and keep us alive.	and grinding because we are	immediate care and	Fossils provide evidence for
	Some of our muscles	omnivores	attention after hirth	evolution
	are voluntary muscles			
Summer 1	 Voluntary muscles, involuntary muscles, skeleton, joint, nutrition. Knowledge: Muscles help us to move and keep us alive. Some of our muscles are voluntary muscles 	 Knowledge: There are different types of teeth. Incisors cut, canines tear, molars grind food. Humans have teeth for ripping and grinding because we are omnivores. 	 Knowledge: Humans have a gestation period of nine months. Different mammals have different gestation periods. Human babies need immediate care and attention after birth. 	 Knowledge: Living things have changed over time. Fossils are the remains of organisms that lived millions of years ago. Fossils provide evidence for evolution.

 that we control. Some of our muscles are involuntary muscles that we do not control, like the heart. Humans and some other animals have a skeleton and muscles on the inside of their bodies. Bones give us shape, help us to move and protect our bodies. A joint is the place where our bones come together. Humans get nutrition from what they eat. Working scientifically Identify and group animals with and without skeletons. Research different food groups (including their pets) and how they keep us healthy. Then, report on the findings. What are the different 	 Saliva softens the food which helps digestion. The stomach stirs up food and mixes it with acid. The intestines move the food around. Whilst in the intestine, nutrients are absorbed by the blood. Animals eat plants or other animals. These often exist together in the same area. Working scientifically Draw and discuss ideas about the digestive system and compare them with models or images. Compare the teeth of carnivores and herbivores and suggesting reasons for the differences. Do carnivores and herbivores have the same teeth? Which organs are part of the digestive system? 	 Once born, humans grow steadily through childhood. When they reach puberty they become able to reproduce. During puberty hormones are released into the bloodstream that cause physical, mental and emotional changes. Humans stop growing at about 20 years old. Humans can expect to live around 80 years but many live for much Working scientifically Research gestation periods of other animals compared to humans. Record data using graphs. Report and present findings, offering possible explanations and predictions. Is there a relationship between a mammal's size and its gestation period? Can you identify all the 	 Offspring are usually similar but not identical to their parents. Inheritance is passing on characteristics from a parent to their offspring. There are differences in characteristics within an individual species, known as variation. Evolution is the change in inherited traits. Animals and plants that adapt well to an environment have more chance of survival. Adaptation plays an important part in evolution as species change over time. Working scientifically Identify scientific evidence to support or refute arguments. Report and present findings. What did Charles Darwin observe when he visited the Galapagos Islands? Was there a pattern between the amount of air
healthy. Then, report on the findings. What are the different food groups and what foods can we find them in?	Are all teeth the same? How do humans digest food? What is the difference between producer, predator and prey? What food chains exist in our local area?	its gestation period? Can you identify all the stages in the human life cycle? Key questions	Galapagos Islands? Was there a pattern between the amount of air pollution present and the colour of the peppered moth?

	How do the skeletons of different animals compare? Key questions Can I control all of my muscles? What is the purpose of bones? Are there any animals that do not have a skeleton? What is nutrition and where do animals get it from? Prior Knowledge: I can describe which part of the body is associated with with sense. (Y1) Describe the basic needs of animals: food, air, water. (Y2) I know the importance of exercise and eating the right amounts of different types of foods. (Y2)	Prior Knowledge: Some muscles move voluntary and some move involuntarily. (Y3) Humans get nutrition from what they eat. (Y3) Animals get food from plants and other animals. I can use a simple food chain. (Y2)	How does the human gestation period compare with other animals? How do humans change as they develop to old age? What is puberty? How does a human's life span compare with other animals? Prior Knowledge: Mammals give birth to live young called offspring. (Y5) The joining of male and female cells is called fertilisation. (Y5)	 Key questions What are fossils and what can we learn from them? Why are offspring similar but not identical to their parents? How are evolution and inheritance linked? What is adaptation and how is that linked to evolution? How does the work of Darwin and Wallace help us to understand how species have changed over time? Prior Knowledge: Fossils are imprints in rocks of dead animals or plants. (Y3) I can describe the life cycle of some animals. (Y5)
Summer 2	Unit: Rocks Key Vocabulary: Fossilisation, fossil, particle, rock, soil, sediment.	Unit: States of Matter Key Vocabulary: Cool, condensation, evaporation, freeze, melt, precipitation, solidify, water vapour.	Unit: Earth and Space Key Vocabulary: Axis, rotate, gravity, galaxy, orbit, satellite.	Unit: Light Key Vocabulary: Ray of light, artificial light source, natural light source, ray diagram, shade.

 There are many different types of rocks which can be grouped according to their properties. Sedimentary rocks are formed by layers of sediment under the sea. Metamorphic rocks are formed under huge heat and pressure. Igneous rocks are formed by volcanoes. Rocks have air spaces in them. Some let water pass through. Fossils are formed when rocks form adturd and this grant, sheet crogles. Soil is made from rocks and oftiging scientifically Soil is made from rocks and organic matter. Soil is made from rocks and organic matter. Working scientifically Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and Sue a hand lens or microscope to identify and rais questions for other and rais que	Knowledge:		Knowledge:	
classify rocks according to similar tests.	 Knowledge: There are many different types of rocks which can be grouped according to their properties. Sedimentary rocks are formed by layers of sediment under the sea. Metamorphic rocks are formed under huge heat and pressure. Igneous rocks are formed by volcanoes. Rocks have air spaces in them. Some let water pass through. Fossils are formed when rock forms around things that once lived. This takes thousands of years. Soil is made from rocks and organic matter. Organic matter is made from decaying remains of living things. Working scientifically 3. Use a hand lens or microscope to identify and classify rocks according to 	 Knowledge: There are three main states of matter: solids, liquids and gases. Water exists in all three of these states and can change in both directions. The repeated process of water in nature changing state is called the Water Cycle. Water evaporates from all water sources. When water evaporates it becomes water vapour. Evaporation occurs faster at higher temperatures. Condensation is when water vapour turns back into liquid. High in the sky, the air is cooler and this turns water vapour back into water droplets. When the water droplets get large enough, they fall as rain, sleet or snow. This is called precipitation. Working scientifically Observe and record evaporation of water over time. Suggest improvements to the test and raise questions for other similar tests. 	 Knowledge: Galaxies are groups of stars held together by gravity. Our galaxy is called the Milky Way. Gravity is a force that pulls all objects together. The Earth's gravity holds us to Earth's surface. The Sun's gravity holds the planets in the Solar System in orbit around it. The Earth rotates on its axis which is why the Sun appears to move across the sky during the day. The Moon is the Earth's natural satellite as it moves around the Earth. Depending on where the Sun and the Moon are, we can see all, some or none of the Moon. These are known as the phases of the Moon. Working scientifically Use evidence to support or refute Copernicus's theory on the Solar System. Record data using different graphs. 	 Knowledge: Some light sources are natural and some are artificial. Light travels in straight lines. Light enables us to see by entering our eyes or by reflecting off objects and then entering our eyes. Shadows are the same shape as the object that cast them. The size of shadows can change but the outline shape remains the same. Working scientifically Use scientific equipment to test the fact that light travels in straight lines and can be reflected into the eye. Record results using scientific diagrams and labels. Is there a pattern between the position of an object and whether it is visible or not? How does a shadow change over the course of a day?

crystals, and whether they have fossils in them or not.2. Investigate what happens when rocks are rubbed together.Can you use an identification key to classify rocks?What happens when water keeps dripping on a sandcastle?Key questions How can we sort rocks? Are all rocks formed in the same way? Can water pass through rocks?How are fossils formed? Are all soils the same?Prior Knowledge: I can describe properties of materials. (Y1) Different materials are suitable for different uses. (Y2)	 How does the surface area of water affect the speed of its evaporation? What is the melting point of a range of materials? Key questions What are the three states of matter? Can things change state? What processes are involved in the Water Cycle? Can we speed up evaporation? Where else might we see condensation? Prior Knowledge: I can describe properties of materials. (Y1) Different materials are suitable for different uses. (Y2) 	Do bigger planets take longer to orbit the Sun? Who was Nicolaus Copernicus and how did his ideas change the way people think about the Solar System? Key questions Why was Nicolaus Copernicus important? How does gravity affect things in our galaxy? Why does the Sun appear to move across the sky during the day? Why can't we see the Moon all of the time?	Are all light sources the same? Can light travel around corners? Do our eyes see out or does light travel in? Are shadows all the same shape and size? Prior Knowledge: Light travels in straight lines from a source. (Y3) Light reflects off objects. (Y3) When light is blocked, a shadow is created. (Y3)
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Vocabulary of working scientifically	llv
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Scientific enquiry	Asking or looking for scientific information.
Observation	Looking carefully at changes that occur over time.
Variable (UKS2)	Something that can be changed and measured.
Comparative test	Changing one variable to see its effect on the other.
Fair test	To carry out a test without showing favour or giving advantage to one side.
Grouping/ classifying	Sorting things into groups based on similarities.
Classification keys	A set of questions about the characteristics of living things.
Pattern-seeking	Looking for relationships.
Research	Careful study of something to find information.
Primary source	First-hand account or record of something.
Secondary source	Work that analyses or interprets information without gaining first- hand evidence.
Plan	An action you intend to take to achieve something.
Relevant questions	Questions that are related to what is being discussed.
Method	A series of actions conducted in a certain order.
Systematic	Based on a method or a plan.
Prediction	Something that is expected to happen.
Accurate measurement	The act of measuring something precisely.
Repeat readings	Taking information from a measurement more than once over time.
Data	Facts, figures or information that can be used to learn about something.
Scientific diagram	A drawing that shows the parts of something related to science.
Labelled diagram	A drawing that includes writing to describe each part.
Evidence	Something that gives proof or reason to believe.
Record results	Make note of the information gathered by following the plan.

Interpret	Explain the meaning of information or actions.
Support ideas	To provide evidence in favour of something.
Refute ideas (UKS2)	To demonstrate that something is false or wrong.
Degree of trust (UKS2)	The extent to which something can be relied upon to be accurate.
Conclusion	An opinion reached after careful consideration.