## Strands

At key stage 2, the knowledge progression takes full account of the national curriculum's strands of:

- Biology ٠
- Chemistry Physics ٠
- ٠
- Working Scientifically ٠

## Science Curriculum Map

	T1	T2	Т3	T4	Т5	T6
Year 3	Geology	Kinetics	Anatomy			Ecology
Year 3	Geology • To know how to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties (e.g. metamorphic, igneous and sedimentary). • To know and be able to describe, in simple terms, how fossils are formed when things that have lived are trapped within rock. • To know that soils are made from rocks and organic matter. • To know thow rocks, change over time. • To explore the work of Mary Anning • To know that a prediction can be used to explain the effect something has. • To know how to predict cause and effect using a causal conjunction (because).	<ul> <li>Kinetics</li> <li>To know how to compare how objects move on different surfaces depending on the properties from which they are made.</li> <li>To know that some forces need contact between two objects, but magnetic forces can act at a distance.</li> <li>To know how different magnets can have different strengths.</li> <li>To know how to observe how magnets attract or repel each other and attract some materials and not others.</li> <li>To know how to compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</li> <li>To know magnets as having two poles.</li> <li>To be able to predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> <li>To know how magnets can be damaged if they are dropped.</li> <li>To explore the work of Albert Einstein.</li> </ul>	Anatomy • To know 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. • To know that humans and some other animals have skeletons and muscles for support, protection and movement.			<ul> <li>Ecology</li> <li>To know the functions of different parts of trees and plants, including the stem/trunk, flower, blossom, petals, seeds, leaves, roots, branches.</li> <li>To know the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and understand how they vary from plant to plant</li> <li>To know the way in which water is transported within plants.</li> <li>To know the importance of leaves for nutrition and flowers for reproduction.</li> <li>To know how to ask questions which can be answered by carrying out scientific enquiry.</li> <li>To know that that standard units of measure can be used to take recordings – g, kg, m, cm, mm, l, ml.</li> <li>To know how to measure using standard units of measure (g, kg, m, cm, mm, l, ml)</li> <li>To know how to use results to draw conclusions.</li> <li>To know how to use my conclusion to ask further questions.</li> </ul>
		Optics				

		<ul> <li>To know that light is needed in</li> </ul>			
		order to see things and that dark			
		is the absence of light.			
		• To know that light is reflected			
		from surfaces.			
		• To know that light from the sun			
		can be dangerous and that there			
		are ways to protect their eyes.			
		• To know that shadows are			
		formed when the light from a light			
		source is blocked by an opaque			
		object.			
		• To be able to find patterns in the			
		way that the size of shadows			
		changes.			
		• To know that questions can be			
		asked and answered by carrying			
		out scientific enquiry.			
		• To know that results are used to			
		draw simple conclusions and raise			
		further questions.			
		<ul> <li>To know that scientific evidence is</li> </ul>			
		used to answer questions or to			
		support findings.			
		<ul> <li>To know how to measure tests</li> </ul>			
		using a range of equipment.			
		<ul> <li>To know how to measure tests</li> </ul>			
		using a range of equipment with			
		increasing accuracy (data loggers).			
		• To know that observations can			
		depend on conditions for scientific			
		enquiry.			
		• To know now to identify the			
		conditions that change when			
Veer 4	Acoustics		Floctrology	Coology	Ecology
rear 4	Acoustics	Anatomy	Electrology	Geology	Ecology
	• To know how sounds are made	• To Know the simple functions of	• To know that common	• To know how to compare	• To know that living things can be
	and understand that these create	the basic parts of the digestive	appliances that run on	and group materials	grouped in a variety of ways.
	vibrations in the air.	system in humans (mouth,	electricity	together, according to	• To know how to use classification
	• I o know that vibrations from	tongue, teeth, oesophagus,	<ul> <li>To know that a simple</li> </ul>	whether they are solids,	keys to help group, identify and
	sounds, travel through a medium to	stomach, small and large	series electrical circuit,	liquids or gases.	name a variety of living things in
	uie edf.	To know the different types of	identifying and naming its	I o know that some	To know that any increases and
	• TO KNOW NOW TO TING PATTERNS	• TO KNOW THE different types of	basic parts, including	materials change state	<ul> <li>TO KNOW that environments can shapped and that this can competiment</li> </ul>
	features of the object that produced	functions	cells, wires, bulbs,	when they are heated or	nose dangers to living things
	it	• To know and interpret a variety	switches and buzzers	cooled, and measure or	pose dangers to inving trimgs.
	• To know that there is a pattern	of food chains, identifying	• IO KNOW WNETHER OR NOT	which this happons in	• To know that conclusions can be
	between the volume of a sound and	producers, predators and prev	a lamp will light in a	degrees Celsius (°C)	drawn from patterns similarities and
	the strength of the vibrations that	• To know the difference between	simple series circuit,	•To know the part played	differences
	produced it.	vertebrates and invertebrates and	based on whether of not	by evaporation and	

	• To know that sounds get fainter as	to sort a range of creatures using this property		the lamp is part of a	condensation in the water	<ul> <li>To know how to use the change in patterns, similarities and differences I</li> </ul>
	increases	this property.		a battory	of evaporation with	have seen to help draw conclusions
	lifereases.	· To los our that that a horse stimulation for		• To know that a switch	tomporature	• To know how to report on findings
	To be a share to see distant and	• To know that that observations for		opens and closes a sincuit	temperature.	from enquiries through oral and
	• To know how to predict a trend	scientific enquiries are limited by the		opens and closes a circuit		written explanations displays or
	(relationship prediction) using a	accuracy of the measurements and		and associate this with	• Io know that that relevant	presentations
	causal conjunction (because).	a Te lue evente en elle evetere etie		whether or not a lamp	scientific questions need to	presentations.
	<ul> <li>To know how to ask relevant scientific</li> </ul>	• To know now to make systematic		lights in a simple series	be asked and answered	
	questions to be answered by carrying	observations.		circuit	through different types of	
	out scientific enquiry.			<ul> <li>To know some common</li> </ul>	scientific enquiries.	
	<ul> <li>To know how to take accurate</li> </ul>			conductors and		
	measurements in standard units.			insulators, and associate		
	• To know that that results are			metals with being good		
	recorded in different ways –			conductors.		
	measurements, tallies, drawings,					
	labelled diagram, tables/charts,					
	pictures.			<ul> <li>To know that a</li> </ul>		
	<ul> <li>To know how to record data</li> </ul>			prediction can be used to		
	appropriately using measurements,			explain the trend		
	tallies, drawings, labelled diagrams,			(relationship) between		
	tables/charts and pictures.			two things.		
	• To know how to measure tests			<ul> <li>To know that that in a</li> </ul>		
	using a range of equipment with			fair test one variable is		
	increasing accuracy (thermometers			changed and one variable		
	and data loggers).			is measured while all other		
				conditions are kept the		
				same.		
				<ul> <li>To know how to choose</li> </ul>		
				and alter appropriate		
				variables whilst all other		
				conditions are kept the		
				same.		
				• To know how to		
				interpret data using		
				measurements, tallies,		
				drawings, labelled		
				diagrams, tables/charts		
				and pictures.		
ar 5	Taxonomy	Astrophysics	Geology		As	trophysics
	<ul> <li>To know and be able to describe</li> </ul>	<ul> <li>To know the movement of the</li> </ul>	<ul> <li>To know how to compare and</li> </ul>		<ul> <li>To know that unsupported of</li> </ul>	bjects fall towards the Earth because
	the differences in the life cycles of a	Earth, and other planets, relative	group materials together,		of the force of gravity acting t	between the Earth and the falling
	mammal, an amphibian, a reptile, an	to the Sun in the solar system.	according to whether they are		object.	
	insect and a bird.	<ul> <li>To know and be able to describe</li> </ul>	solids, liquids or gases.		• To know the effects of air re	sistance, water resistance and friction,
	<ul> <li>To know the life process of</li> </ul>	the movement of the Moon	<ul> <li>To know that some materials</li> </ul>		that act between moving surf	aces.
	reproduction in some plants and	relative to the Earth.	change state when they are		• To know how to explore up	thrust and investigate how to sink a
	animals	• To know that the Sun, Earth and	heated or cooled, and measure		bottle.	
		Moon are approximately spherical	or research the temperature at		• To know how to explore the	weight of air by investigating inflated
	<ul> <li>To know that scientific knowledge</li> </ul>	bodies.	which this happens in degrees		and deflated balloons.	
	can be used to explain a prediction.	<ul> <li>To know how to use the idea of</li> </ul>	Celsius (°C).		• To know how to investigate	water resistance by creating different
		the Earth's rotation to explain day	<ul> <li>To know the part played by</li> </ul>		sized boats for hulls.	
		and night and the apparent	evaporation and condensation		• To know how to investigate	how the size of a boat's hull affects
			in the water cycle and associate		the speed of its movement.	

		movement of the sun across the sky.	the rate of evaporation with temperature. • To know the effects of acidity	• To know how to use prior knov and explain it using scientific kno	vledge to make a relationship prediction wledge.
		• To know that that keeping	on a range of rocks	• To know that scientific know	ledge can be used to explain a
		observations as consistent as		prediction.	
		possible can improve enquiry.	• To know that how to accurately	• To know how to use test resu	Ilts to make predictions for further
		• To know how to take accurate	use further test measuring	tests	
		measurements with increasing	devices, including digital and	• To know that now and when	to repeat tests and measurements.
		• To know how to think of their	measuring cylinders and beakers	• To know how to record data ar	d results of increasing complexity using
		own questions about scientific	• To know how to use digital and	scientific diagrams and labels, cla	assification keys, tables, scatter graphs,
		phenomena, analyse functions,	analogue scales, measuring	bar and line graphs.	
		relationships and interactions more	cylinders and beakers.	<ul> <li>To know how to choose spec</li> </ul>	ific/appropriate methods of recording.
		systematically.	<ul> <li>To know how to report and</li> </ul>	<ul> <li>To know how to identify relation</li> </ul>	tionships within results
			present findings from enquiries –	• To know that how to plan for a	lifferent types of scientific enquiries to
			including conclusions, causal	answer questions - including reco	ognizing and controlling variables when
			degree of trust in results.	The costary.	
Year 6	Human Biology & Taxonomy		Human Biology		Electrology & Optics
	Human Biology		• To know the main parts of the		Electrology
	<ul> <li>To know that living things have</li> </ul>		human circulatory system and		<ul> <li>To associate the brightness of a</li> </ul>
	changed over time and that fossils		describe the functions of the		lamp or the volume of a buzzer with
	things that inhabited the Earth		heart, blood vessels and blood.		the number and voltage of cells
	millions of years ago.		• To know the impact of diet,		used in the circuit
	To know that living things		exercise, drugs and lifestyle on		• To compare and give reasons for
	produce offspring of the same kind,		the way their bodies function.		variations in how components
	but normally offspring vary and are		Io know the ways in which		bulbs, the loudness of buzzers and
	not identical to their parents		transported within animals		the on/off position of switches
	• To know how animals and plants		including humans.		<ul> <li>To use recognised symbols when</li> </ul>
	are adapted to suit their				representing a simple circuit in a
	that adaptation may lead to		• To know that predictions can		diagram
	evolution.		be justified using scientific		
	<ul> <li>To know the work of Grace</li> </ul>		knowledge.		Optics
	Hopper, Charles Darwin, Sir Tim		• To know how to use prior		IO KNOW that light appears to     travel in straight lines
	Berners-Lee, Rosalind Franklin,		knowledge to make a hypothesis		<ul> <li>To know how to use the idea that</li> </ul>
	Wilhelm Röntgen and Esther		things and justify it using scientific		light travels in straight lines to
	Lederberg.		knowledge.		explain that objects are seen
	Taxonomy		-		because they give out or reflect light
	• To describe the differences in the				into the eye.
	life cycles of a mammal, an				• To know that we see things
	amphibian, a reptile, an insect and a				because light travels from light
	bird.				sources to objects and then to our
	<ul> <li>To describe the life process of</li> </ul>				eves.
	reproduction in some plants and				<ul> <li>To know how to use the idea that</li> </ul>
	animals				light travels in straight lines to
	<ul> <li>TO KNOW that living things have changed over time and that fossils</li> </ul>				explain why shadows have the same
	provide information about living				shape as the objects that cast them.

things that inhabited the Earth			<ul> <li>To explore the work of Sir Isaac</li> </ul>
millions of years ago.			Newton, Alhazen, Kepler and James
<ul> <li>To know that living things</li> </ul>			Clerk Maxwell
produce offspring of the same kind,			
but normally offspring vary and are			<ul> <li>To know that predictions can be</li> </ul>
not identical to their parents			justified using scientific knowledge.
• To know how animals and plants			• To know how to use prior knowledge
are adapted to suit their			to make a hypothesis about a
environment in different ways and			relationship between two things and
that adaptation may lead to			justify it using scientific knowledge.
evolution.			<ul> <li>To know how to use test results to</li> </ul>
• To explore the work of Grace			make predictions for further
Hopper, Charles Darwin, Sir Tim			comparative and fair tests.
Berners-Lee, Rosalind Franklin,			<ul> <li>To know how to draw conclusions</li> </ul>
Wilhelm Röntgen and Esther			based on data and observations and use
Lederberg.			evidence to justify ideas using scientific
			knowledge and language.
• To know how and when to rapeat			<ul> <li>To know that how to recognise and</li> </ul>
observations for scientific enquiries to			remove outliers from a set of data.
vary conditions and make			<ul> <li>To know that what discrete and</li> </ul>
improvements.			continuous data is.
• To know how to take accurate			<ul> <li>To know how to justify the removal</li> </ul>
measurements and take repeated			of outliers from a set of data.
readings when necessary.			<ul> <li>To know how to select appropriate</li> </ul>
• To know that which testing			data to justify conclusions.
equipment to choose to carry out a			<ul> <li>To know how to identify anomalies</li> </ul>
scientific enquiry.			within results and use these to inform
• To know that how to identify			my conclusions
conditions that were imperfectly			<ul> <li>To know how and when to repeat</li> </ul>
controlled and explain how these			different types of scientific enquires
might affect results.			to answer questions.
• To know how to choose appropriate			<ul> <li>To know how to repeat different</li> </ul>
equipment.			types of scientific enquiries.
• To know how to control variables			

Strand	Year 3	Year 4	Year 5	Year 6
Biology				
Living		Ecology	Taxonomy	Taxonomy
things and their habitats		<ul> <li>To know that living things can be grouped in a variety of ways.</li> <li>To know how to use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> </ul>	<ul> <li>To know the differences in the life cycles of a mammal, an amphibian, a reptile, an insect and a bird.</li> <li>To know the life process of reproduction in some plants and animals</li> </ul>	<ul> <li>To know the differences in the life cycles of a mammal, an amphibian, a reptile, an insect and a bird.</li> <li>To know the life process of reproduction in some plants and animals</li> </ul>

		• To know that environments can change and that this can sometimes pose dangers to living things.	
Animals including humans	<ul> <li>Anatomy</li> <li>To know 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</li> <li>To know that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul>	<ul> <li>Anatomy</li> <li>To know the simple functions of the basic parts of the digestive system in humans (mouth, tongue, teeth, oesophagus, stomach, small and large intestines).</li> <li>To know the different types of teeth in humans and their simple functions</li> <li>To know how to construct and interpret a variety of food chains, identifying producers, predators and prey.</li> <li>To know the difference between vertebrates and invertebrates and to sort a range of creatures using this property.</li> </ul>	<ul> <li>Human Biology</li> <li>To know the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>To know the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>To know the ways in which nutrients and water are transported within animals, including humans.</li> </ul>
Plants	<ul> <li>Ecology</li> <li>To know, and be able to describe, the functions of different parts of trees and plants, including the stem/trunk, flower, blossom, petals, seeds, leaves, roots, branches.</li> <li>To know the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and understand how they vary from plant to plant</li> <li>To know the way in which water is transported within plants.</li> <li>To know the importance of leaves for nutrition and flowers for reproduction.</li> </ul>		
Nutrition, Evolution and inheritance			<ul> <li>Human Biology</li> <li>To know that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>To know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>To know how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> <li>To know the work of Grace Hopper, Charles Darwin, Sir Tim Berners-Lee, Rosalind Franklin, Wilhelm Röntgen and Esther Lederberg.</li> </ul>

Chemistry				
Evervdav				
Materials and				
uses of				
everyday				
materials				
Dealerand	Packs	Coology	Coology	
ROCKS and	NUCKS	deology	deology	
States, and	• To know how to compare and group	• To know how to compare and group	<ul> <li>To know how to compare and group</li> </ul>	
changes, of	together different kinds of rocks on	materials together, according to whether	materials together, according to whether they	
Matter	the basis of their appearance and	they are solids, liquids or gases.	are solids, liquids or gases.	
	simple physical properties (e.g.	<ul> <li>To know how to observe that some</li> </ul>	<ul> <li>To know that some materials change state</li> </ul>	
	metamorphic, igneous and	materials change state when they are heated	when they are heated or cooled, and measure	
	sedimentary).	or cooled, and measure or research the	or research the temperature at which this	
	<ul> <li>To know how to describe in simple</li> </ul>	temperature at which this	happens in degrees Celsius (°C).	
	terms how fossils are formed when	happens in degrees Celsius (°C).	<ul> <li>To know and be able to describe in detail the</li> </ul>	
	things that have lived are trapped	<ul> <li>To know the part played by evaporation</li> </ul>	part played by evaporation and condensation	
	within rock	and condensation in the water cycle and	in the water cycle and associate the rate of	
	<ul> <li>To know that soils are made from</li> </ul>	associate the rate of evaporation with	evaporation with temperature.	
	rocks and organic matter.	temperature.	. To know offects of acidity on a range of	
	• To understand now rocks, change	• To know the effects of actuity of a range		
	• To explore the work of Mary Apping	OTTOCKS	TOERS	
	To explore the work of Mary Anning			
Physics				
Seasonal			Astrophysics	
Seasonal Changes			Astrophysics	
Seasonal Changes			• To know the movement of the Earth, and	
Seasonal Changes			• To know the movement of the Earth, and other planets, relative to the Sun in the solar	
Seasonal Changes Earth and			<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> </ul>	
Seasonal Changes Earth and Space			<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Magn relative to the Farth</li> </ul>	
Seasonal Changes Earth and Space			<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know be used describe to Sun Earth and</li> </ul>	
Seasonal Changes Earth and Space			<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> </ul>	
Seasonal Changes Earth and Space			<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's</li> </ul>	
Seasonal Changes Earth and Space			<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the</li> </ul>	
Seasonal Changes Earth and Space			<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>	
Seasonal Changes Earth and Space			<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>	
Seasonal Changes Earth and Space Forces and	Kinetics		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> </ul>	Forces and Magnets
Seasonal Changes Earth and Space Forces and Magnets	Kinetics		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>	Forces and Magnets
Seasonal Changes Earth and Space	Kinetics  • To know how to compare how		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> <li>To know that unsupported objects fall to the formula the forth home on th</li></ul>	Forces and Magnets
Seasonal Changes Earth and Space	Kinetics  • To know how to compare how objects move on different surfaces		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> <li>To know that unsupported objects fall towards the Earth because of the force of empirication to the Earth because of the force of empirication the Earth because of the force of empirication to the Earth because of the Earth because o</li></ul>	Forces and Magnets
Seasonal Changes Earth and Space	Kinetics • To know how to compare how objects move on different surfaces depending on the properties from which they are made		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> <li>To know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> </ul>	Forces and Magnets
Seasonal Changes Earth and Space	Kinetics  • To know how to compare how objects move on different surfaces depending on the properties from which they are made. • To know that some forces need		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> <li>To know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>To know the effects of air registance water</li> </ul>	Forces and Magnets
Seasonal Changes Earth and Space	Kinetics  • To know how to compare how objects move on different surfaces depending on the properties from which they are made. • To know that some forces need contact between two objects but		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> <li>To know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>To know the effects of air resistance, water resistance and friction that act between</li> </ul>	Forces and Magnets
Seasonal Changes Earth and Space	Kinetics  • To know how to compare how objects move on different surfaces depending on the properties from which they are made. • To know that some forces need contact between two objects, but magnetic forces can act at a distance		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> <li>To know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>To know the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> </ul>	Forces and Magnets
Seasonal Changes Earth and Space	Kinetics  • To know how to compare how objects move on different surfaces depending on the properties from which they are made. • To know that some forces need contact between two objects, but magnetic forces can act at a distance. • To know how different magnets can		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> <li>To know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>To know the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> <li>To know how to explore up thrust and</li> </ul>	Forces and Magnets
Seasonal Changes Earth and Space	Kinetics • To know how to compare how objects move on different surfaces depending on the properties from which they are made. • To know that some forces need contact between two objects, but magnetic forces can act at a distance. • To know how different magnets can have different strengths.		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> <li>To know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>To know the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> <li>To know how to explore up thrust and investigate how to sink a bottle.</li> </ul>	Forces and Magnets
Seasonal Changes Earth and Space	Kinetics • To know how to compare how objects move on different surfaces depending on the properties from which they are made. • To know that some forces need contact between two objects, but magnetic forces can act at a distance. • To know how different magnets can have different strengths.		<ul> <li>Astrophysics</li> <li>To know the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>To know, and be able to describe, the movement of the Moon relative to the Earth.</li> <li>To know how to describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>To know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Astrophysics</li> <li>To know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>To know the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> <li>To know how to explore up thrust and investigate how to sink a bottle.</li> <li>To know how to explore the weight of air by</li> </ul>	Forces and Magnets

	<ul> <li>To know how magnets, attract or</li> </ul>		• To know how to investigate water resistance	
	repel each other and attract some		by creating different sized boats for hulls.	
	materials and not others.		• To know how to investigate how the size of	
	• To know how to compare and group		a boat's hull affects the speed of its	
	together a variety of everyday		movement.	
	materials on the basis of whether they		<ul> <li>To know how to design parachutes and</li> </ul>	
	are attracted to a magnet, and identify		explore how shape can limit/extend the	
	some magnetic materials.		amount of drag.	
	• To know that magnets have two		To know that some mechanisms, including	
	noles		levers nulleys and gears, allow a smaller force	
	•To be able to predict whether two		to have a greater effect	
	magnets will attract or repel each		to have a greater cheet.	
	other depending on which poles are			
	facing			
	<ul> <li>To know that magnets can be</li> </ul>			
	domaged if they are dropped			
	a Te know the work of Albert			
	To know the work of Albert			
	Einstein.	ļ	ļĮ	
Light	Optics			Optics
	- To know that light is pooled in order			- To know that light appears to travel in straight lines
	• TO KNOW UNde light is needed in order			• To know that light appeals to traver in straight lines.
	to see things and that dark is the			• To know now to use the fidea that light thavers in straight lines
	absence of light.			to explain that objects are seen because they give out or renect
	• To know that light is reflected from			light into the eye.
	surfaces.			<ul> <li>To know that we see things because light travels from light</li> </ul>
	Io know that light from the sun can			sources to our eyes or from light sources to objects and then to
	be dangerous and that there are ways			our eyes.
	to protect their eyes. To recognise			I o know how to use the idea that light travels in straight lines
	that shadows are formed when the			to explain why snadows have the same shape as the objects
	light from a light source is blocked by			that cast them.
	an opaque object.			• To know the work: Sir Isaac Newton, Alhazen, Kepier and
	To know how to find patterns in the			James Clerk Maxwell
	way that the size of shadows changes.	Plant valante.	ļ!	et a standa and
Electricity	l	Electrology		Electrology
	1	• To know common appliances that run on		• To know how to associate the brightness of a lamp or the
	1	electricity		volume of a huzzer with the number and voltage of cells used in
	1	• To know how to construct a simple series		the circuit
	1	electrical circuit identifying and naming its		• To know how to compare and give reasons for variations in
	1	basic parts including cells wires hulbs		how components function including the brightness of hulbs
	1	switches and huzzers		the loudness of huzzers and the on/off position of switches
	1	• To know whether or not a lamp will light in		• To know how to use recognised symbols when representing a
	1	• To know whether or not a lamp with grit in		• To know now to use recognised sympols when representing a simple circuit in a diagram
	1	a simple series circuit, based on whether of		Simple circuit in a diagram
	l l	not the famp is part of a complete loop with		
	l l	a Dattery		
	l l	• To know that a switch opens and closes a		
	l l	CIFCUIT and associate this with whether or not		
	1	a lamp lights in a simple series circuit		
	l l	Io know some common conductors and		
	1	insulators, and associate metals with being		
	<u>ا</u>		<u>ا</u>	
Sound	1	ACOUSTICS		
		,	1	

		<ul> <li>To know how sounds are made and</li> </ul>		
		understand that these create vibrations in		
		the sir		
		• To know that vibrations from sounds		
		travel through a modium to the ear		
		To know how to find patterns between the		
		• To know now to find patterns between the		
		pitch of a sound and features of the object		
		that produced it.		
		• To know how to find patterns between the		
		volume of a sound and the strength of the		
		vibrations that produced it		
		<ul> <li>To know that sounds, get fainter as the</li> </ul>		
		distance from the sound source increases.		
To know that res	ults are used to draw simple conclusions	To know that conclusions can be drawn from	To know how to report and present findings from	To know how to draw conclusions based on data and observations
and raise further	questions.	patterns, similarities and differences.	enquiries – including conclusions, causal	and use evidence to justify ideas using scientific knowledge and
			relationships and explanations and degree of trust	language.
To know that scie	entific evidence is used to answer	To know how to use the change in patterns,	in results.	To have a been to extend any matrix data to the Million of Stars
questions or to su	upport findings.	similarities and differences I have seen to help	To have a basis to the off and attemptions with the	To know how to select appropriate data to justify conclusions.
		draw conclusions.	To know now to identify relationships within	To know how to identify anomalies within results and use these
To know how to	use results to draw conclusions.		results.	to inform my conclusions
		To know how to report on findings from		
To know how to	use my conclusion to ask further	enquiries through oral and written		
questions.		explanations, displays or presentations.		
Conclusion, scien	ntific evidence, findings	Changes, similarities, differences	Relationships	Anomalies, justify
To know that that	t standard units of measure can be used to	To know that that results are recorded in	To know how to record data and results of	To know that how to recognise and remove outliers from a set of
take recordings -	g. kg. m. cm. mm. l. ml.	different ways – measurements, tallies,	increasing complexity using scientific diagrams	data.
tuke recordings	<i>b</i> , <i>b</i> ,,, .,	all chemical and a chief and a		dutui
	<i>b, ··b, ···, •···, ····, ·, ·</i> ····	drawings, labelled diagram, tables/charts,	and labels, classification keys, tables, scatter	
To know how to m	neasure using standard units of measure (g,	drawings, labelled diagram, tables/charts, pictures.	and labels, classification keys, tables, scatter graphs, bar and line graphs.	To know that what discrete and continuous data is.
To know how to m kg, m, cm, mm, l, r	neasure using standard units of measure (g, ml)	drawings, labelled diagram, tables/charts, pictures.	and labels, classification keys, tables, scatter graphs, bar and line graphs.	To know that what discrete and continuous data is.
To know how to m kg, m, cm, mm, l, r	neasure using standard units of measure (g, ml)	drawings, labelled diagram, tables/charts, pictures.	and labels, classification keys, tables, scatter graphs, bar and line graphs. To know how to choose specific/appropriate	To know that what discrete and continuous data is. To know how to justify the removal of outliers from a set of
To know how to m kg, m, cm, mm, l, r To know how to t	neasure using standard units of measure (g, ml) represent data in a bar graph.	drawings, labelled diagram, tables/charts, pictures. To know how to record data appropriately using measurements, tallies, drawings, labelled	and labels, classification keys, tables, scatter graphs, bar and line graphs. To know how to choose specific/appropriate methods of recording.	To know that what discrete and continuous data is. To know how to justify the removal of outliers from a set of data.
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	To know that a prediction can be used to explain the trend (relationship) between two things.	To know how to use test results to make predictions for further tests	To know how to use test results to make predictions for further comparative and fair tests.
Explain, cause, effect	Trend	Scientific knowledge	Hypothesis, justify
To know that questions can be asked and answered by carrying out scientific enquiry. To know how to ask questions which can be answered by carrying out scientific enquiry.	To know how to ask relevant scientific questions to be answered by carrying out scientific enquiry. To know that that relevant scientific questions need to be asked and answered through different types of scientific enquiries.	To know that how to plan for different types of scientific enquiries to answer questions - including recognizing and controlling variables when necessary. To know how to think of their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically.	To know how and when to repeat different types of scientific enquires to answer questions. To know how to repeat different types of scientific enquiries.
Scientific enquiry	Relevant	Variables, control	Repeat, attribute, check, organise
To know that that how to measure tests using a range of equipment. To know how to measure tests using a range of equipment with increasing accuracy (data loggers).	To know that that in a fair test one variable is changed and one variable is measured while all other conditions are kept the same. To know how to choose and alter appropriate variables whilst all other conditions are kept the same. To know how to measure tests using a range of equipment with increasing accuracy (thermometers and data loggers).	To know that how to accurately use further test measuring devices, including digital and analogue scales, measuring cylinders and beakers. To know that how and when to repeat tests and measurements. To know how to use digital and analogue scales, measuring cylinders and beakers. To know how to justify the necessity to change elements	To know that which testing equipment to choose to carry out a scientific enquiry. To know that how to identify conditions that were imperfectly controlled and explain how these might affect results. To know how to choose appropriate equipment. To know how to control variables.
Measure, range of equipment, suitable	Variable, conditions, alter	Accurate, repeat tests	Controlled, control test

## Oracy – 'Talk like a ...' Scientist Progression

Strand	Year 3	Year 4	Year 5	Year 6
Biology				
All living things and their habitats		Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering
Animals, including humans	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain		Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle
Plants	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal)			

Nutrition and Evolution and Inheritance				Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils
Chemistry				
Everyday Materials and uses of everyday materials				
Rocks and States, and changes, of Matter	Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil	Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	
Physics				
Seasonal Changes Earth and Space			Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets	
Forces and Magnets	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole		Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	
Light	Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous			straight lines, light rays
Electricity		Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol		Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage
Sound		Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation		