

Science Key Stage 2

Curriculum map



Intent

Six underlying attributes at the heart of Bell Lane's curriculum and lessons.

1. Lessons and units are knowledge and vocabulary rich so that pupils build on what they already know to develop powerful knowledge.
2. Knowledge is sequenced and mapped in a coherent format so that pupils make meaningful connections.
3. The Bell Lane science curriculum is designed so that disciplinary knowledge is embedded within the substantive content.
4. Our curriculum is evidence informed through rigorous application of best practice and the science of learning.
5. We prioritise creating a diverse curriculum by committing to diversity in teaching and teachers, and the language, texts and media we use, so all pupils feel positively represented.
6. Creating an accessible curriculum that addresses the needs of all pupils is achieved to accessibility guidelines and requirements.

Units

KS2 Science is formed of 21 units and this is the recommended sequence:

Unit Title	Recommended year group	Number of lessons
1. Animals including humans	Year 3	14
2. Light	Year 3	14
3. Rocks	Year 3	8
4. Plants	Year 3	11
5. Forces and Magnets	Year 3	11
6. Electricity	Year 4	11
7. Animals including humans	Year 4	12
8. Sound	Year 4	12
9. States of matter	Year 4	10
10. Living things and their habitats	Year 4	7

Unit Title	Recommended year group	Number of lessons
11. Living things and their habitats	Year 5	14
12. Animals including humans	Year 5	10
13. Properties and changes of materials	Year 5	23
14. Earth and space	Year 5	10
15. Forces	Year 5	10
16. Light	Year 6	12
17. Electricity	Year 6	10
18. Evolution and inheritance	Year 6	8
19. Animals including humans	Year 6	8
21. History of Science	Year 6	10

BELL LANE YEAR 3 SCIENCE CURRICULUM MAP

	AUTUMN TERM 1	AUTUMN 2	SPRING 1	Spring 2	SUMMER 1	SUMMER 2
Unit of Work National curriculum	Animals Including Humans. Healthy eating	Animals including humans The body	Rocks	Plants	Forces and magnets	Light

Year 3 - Plants

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser What do you think you know? What you do not know? What would you like to know?	Teacher assessment		
2	What are the parts and functions of a plant?	The main parts and functions of a plant How to draw a scientific diagram	Parts/ Functions- Roots, stems, leaves, flowers- conduct, attract, reproduce, absorb, anchor, support, seeds- Carbon Dioxide, sunlight- Photosynthesis, food.	draw and label diagrams
3	What does a plant need to survive?	To undertake a fair test to investigate the needs of plants.	Needs, light, water, soil, air,	Set up fair test by

4			space- fair test, variable, constant, record,	establishing question
5 6	How do plants transport water?	Describe what transpiration is The three main steps of water transport in plants How to prove that water moves up a plants stem	Water transpiration, stem, transport, petals, absorb, evaporate, conduct, support, roots, leaves, flowers- environmental factors, petals, width, length- expelled, stomata.	Choose activities from Switched on science resource: 4.1 Plant parts activities 4 and 5.
7	What is the life cycle of a flowering plant?	The parts of a flowering plant's life cycle. The conditions required for germination. Three ways in which seed dispersal takes place	Cycle, Germination, roots, leaves, flowering, seed dispersal- conditions, underground, photosynthesis, attract, reproduce, air, water, light, nutrients- Wind, animal wind and explosive dispersals. Pepperpots (Red Champion), Parachuted (Dandelion), Spinners (Sycamore)- Hooks.	
8	What is the relationship between structure and function of a plant?	Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. They should explore questions that focus		

		on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.		
9	Do plants make their own food?	Pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.		
10	Cultural Capital Visit, visitor, scientist			
11	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 3- Animals Including Humans

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2	Diagnostic and mind map - what has been the prior learning on animals and their habitats?	Recap Y2 learning		
3	How can we keep healthy	Create a nutrient information sheet for	Nutrients	Asking different questions

4	through what we eat?	<p>the main nutrients. Explain how each nutrient is used by the body (e.g carbohydrates provide energy) Give examples of foods that provide each nutrient.</p>	<p>Nutrition Carbohydrate (Sugars/starches) Fats Protein Vitamins & minerals Fibre Water</p>	Recording data
5	<p>What do the food labels on the back of foods mean? What nutrients can be found in some common foods?</p>	<p>Look at a bag of shopping and identify which foods provide which key nutrients. (Science Capital) What is the difference between a nutrient group and a food group? Create a nutrient fact file sheet in a group showing which nutrients some common foods provide.</p>	<p>Nutrition group Food group Factfile</p>	<p>asking questions gathering and presenting data</p>
6 7	How can I use my knowledge to create a healthy meal?	<p>Understand what is meant by a balanced diet. Study Eatwell plate and food pyramid - examine how different food groups offer different nutrients. Use template to draw and label balanced meal (with NUTRIENTS not food groups).</p>	<p>Balanced diet Healthy meal</p>	<p>reporting on finding from enquiries making diagrams and labelling</p>
8	How can I make healthy choices when visiting restaurants?	<p>Use computer to look up nutritional information for favourite options from McDonald's. Make healthy choices for a meal. (Science Capital)</p>	<p>Nutrition calculator</p>	<p>science capital gathering and presenting data</p>

9	<p>What are vertebrates and invertebrates?</p> <p>recap learning from previous years</p>	<ul style="list-style-type: none"> • All animals have a skeleton • All animals are either vertebrates or invertebrates • Vertebrates have an endoskeleton • Invertebrates have a hydrostatic or exoskeleton • Visit from ferrets/snake/tortoise • Sorting activity (labelling) 	<p>backbone vertebrates invertebrates endoskeleton exoskeleton hydrostatic skeleton ferret tortoise</p>	<p>Recording and presenting data identifying differences and similarities Making observations</p>
10	<p>What is the human skeleton made of?</p>	<ul style="list-style-type: none"> • How many bones are in the human body • Why adults have fewer bones than babies • Correct name for bones • Drawing and labelling activity 	<p>skull - cranium rib cage - thoracic cage backbone - spine - vertebral column upper arm bone - humerus jawbone - mandible hipbone - pelvis kneecap - patella inner forearm - ulna outer forearm - radius finger/toe bones - phalanges</p>	<p>Recording and presenting data identifying differences and similarities</p>
11	<p>How do joints help our bodies move?</p>	<ul style="list-style-type: none"> • Name different types of joint and examples of where they are in the body. • Demonstrate movement to each other. 	<p>fixed joint movable joints pivot ball-and-socket hinge gliding</p>	<p>setting up practical enquiries drawing simple conclusions</p>
12	<p>Why do muscles work in pairs?</p>	<ul style="list-style-type: none"> • learn about muscles and how they work. • Learn what happens to our muscles when we exercise. 	<p>expand contract</p>	<p>setting up practical enquiries drawing simple conclusions</p>

		<ul style="list-style-type: none"> How people strengthen and grow their muscles. 		
13	Cultural Capital Visit, visitor, scientist			
14	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 3- Rocks

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser What do you think you know? What you do not know? What would you like to know?	Teacher assessment	Crust, mantle, outer core, inner core	
2	What is the Rock Cycle?	<ul style="list-style-type: none"> Classify rocks based on their appearance Draw and explain the rock cycle Identify how igneous, metamorphic and sedimentary rock is formed. 	Size, texture, natural/human-made, pattern, weight, colour, Crust, Mantle, Outer Core, Inner Core, magma, volcano, cools, crystals, igneous rock, sedimentary rock, sediment, heat, pressure, metamorphic rock,	make systematic and careful observations, present data in a variety of ways, record findings using simple scientific language, drawings, labelled diagrams, report on findings from enquiries

3 4	What are the key properties of rock?	<ul style="list-style-type: none"> • Identify some properties of rocks • I can work scientifically (observation) to identify the properties of rocks 	durability , permeability, density, igneous, sedimentary, metamorphic, fair test, pumice, slate, sandstone,	use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions, gather, record, classify and present data in a variety of ways to help in answering questions (Year 3 focus)
5 6	What are fossils? How are fossils formed? What kinds of fossils are there? What can we learn from fossils? Who was Mary Anning?	<ul style="list-style-type: none"> • I can identify some of each type of rock. • I know how fossils are made. • I can identify different types of fossils. • Learn about the work of a famous palaeontologist. 	Body fossil, trace fossil, fossilisation, sediment, minerals, weathering, erosion, igneous, sedimentary, metamorphic, properties, flesh, rots, skeleton	ask relevant questions and use different types of scientific enquiries to answer them
7	What is soil? What is soil made from?	<ul style="list-style-type: none"> • To identify the properties of different soil samples. • To compare different soil samples. 	Crust, Mantle, Outer Core, Inner Core, top soil, subsoil, base rock, air, broken up rock, organic matter, volcano, clay, sandstone, chalk, sandy soil, chalky soil, clay soil, particles, silt, sand, organic matter, microscope, sieve, observation, magnifying glass.	Identifying, grouping and classifying, using scientific equipment
8	Cultural Capital Visit, visitor, scientist			

9	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		
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Year 3- Light

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2 3	How can you protect your eyes? Why is light from the sun dangerous? What is an eclipse?	<ul style="list-style-type: none"> Recognise that light from the sun can be dangerous and there are ways to protect their eyes. State that Earth rotates on an axis. How the spin of the Earth creates night and day. 	Eclipse- Solar eclipse/ Lunar eclipse- Earth/Sun/ Moon- rotates/ travels- Eyesight, damage- Pinhole projector- Sun safety.	asking relevant questions and using different types of scientific enquiries to answer them
4 5	What is Light? Why do we need light to see things?	<ul style="list-style-type: none"> Recognise that light is needed to see things and dark is the absence of light. To carry out an investigation on the colour of light. To understand what the Visible light spectrum is. 	Light and dark/ absence of light- Whizzer wheel- Colour of light- Visible light/ White light/ visible light spectrum- straight lines.	setting up simple practical enquiries, comparative and fair tests
6 7	What are reflections? How is light reflected from	Pupils should explore what happens when light reflects off a mirror or other	Reflection, surfaces, light sources, straight lines,	Complete activities from Switched on science

8	surfaces?	reflective surfaces, including playing mirror games to help them to answer questions about how light behaves.	obstacles, objects, absorb, light rays, reflective surfaces, light levels.	resource
9	Reflections	<ul style="list-style-type: none"> • Notice that light is reflected from surfaces. • What happens to light when it is reflected. • Differences between reflective and non-reflective materials. • Sorting reflective and non-reflective materials. 	Reflection, surfaces, light sources, straight lines, obstacles, objects, absorb, light rays, reflective surfaces, light levels.	gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
10 11	What are shadows? How do shadows change over time?	<p>Finding patterns and investigating how to change the size of a shadow by moving it further from/closer to the light source.</p> <p>Find patterns in the way that the size of shadows change.</p>	Shadow size/ Early morning shadow/ Midday shadow/ late afternoon shadow- Sun's rays- Longer/ Shorter- Light source- wide, narrow, angle, sun, cm, m, length, direction, shape.	making systematic and careful observations and, where appropriate, taking accurate measurements using standard units
11 12	How are shadows formed?	<ul style="list-style-type: none"> • Recognise that shadows are formed when the light from a light source is blocked by a solid object. • Compare transparent, translucent and opaque objects . • How to make shadows 	Size of shadows- light source- blocked- opaque, translucent, transparent objects- items- projector.	reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
13	Cultural Capital Visit, visitor, scientist			

14	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		
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Year 3- Forces and Magnets

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2	What is a force?	<ul style="list-style-type: none"> Define what a force is. Understand and identify different types of forces. 	Push, pull, twist, force, object, motion	record findings using simple scientific language, sort and classify
3	What is friction?	<ul style="list-style-type: none"> Understand how friction affects the way objects move on different surfaces. Carry out a fair investigation comparing how objects move on different surfaces. 	Friction, surfaces, sliding, opposite, direction, object, movement, slows down, moving object, quickly, further, rough/bumpy, smooth/shiny surface,	Measuring, fair test, set up simple practical enquiries, comparative and fair tests, make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, gather, report on findings from enquiries, including oral and written

				explanations, displays or presentations of results and conclusions, identify differences, similarities or changes related to simple scientific ideas and processes (Year 3 focus)
4 5	Which objects are magnetic?	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.	Magnetism, horseshoe magnets, bar magnets, circular magnets, south pole, north pole, attraction, repulsion, metals, magnetic/non-magnetic,	Grouping and classifying, recording observations, predictions, scientific vocabulary, fair test,
6 7	Which magnet is the strongest?	<ul style="list-style-type: none"> To recognise that some forces need contact between two objects, but magnetic forces can act at a distance. To set up an enquiry in order to investigate the strength of some of our magnets. 	Magnetism, magnet, magnetic, non-magnetic, force, poles, push, pull, repel, attract, north, south, similar, opposite.	Fair test, prediction, setting up an enquiry, Global capital: magnets in a scrap yard / toys
8 9	Choose activities from the switched on science resource			
10	Cultural Capital Visit, visitor, scientist			
11	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

BELL LANE **Year 4** CURRICULUM MAP

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit of Work National curriculum	Electricity	Animals, including humans	Sound	States of matter	Living things and their habitats	Living things and their habitats

Year 4- Electricity

Lesson number	Lesson question	Pupils will learn	Key Vocabulary	Working Scientifically Skills
1	Rising stars assessment Front cover (KWL) Knowledge organiser What do you think you know? What you do not know? What would you like to know?	Teacher assessment		
2	What is a simple circuit?	<ul style="list-style-type: none"> Construct a simple series electrical circuit Identify and name its basic parts Identifying common appliances that run on electricity 	-cells, wires, bulbs, circuit/ simple series electrical circuit, crocodile clips, flow, electricity, component/ elements;	Ask relevant questions and use different types of scientific enquiries to answer them.
3	Is it a complete circuit or not?	<ul style="list-style-type: none"> Construct a simple series 	-cells, battery , wires,	Reporting on findings from

		<p>electrical circuit .</p> <ul style="list-style-type: none"> Identify and name its basic parts, including cells, wires, bulbs and battery Identify whether or not a lamp (lightbulb) will light in a simple series circuit, based in whether or not the lamp (bulb) is part of a c complete loop with a battery 	<p>crocodile clips, bulbs, closed /open circuit, flow, electricity, component/ elements, circuit/ simple series electrical circuit,;</p>	<p>enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p>
4	<p>Which materials allow electricity to pass through them?</p>	<ul style="list-style-type: none"> Investigate which materials allow and which ones do not allow electricity to pass through them 	<p>-cells, battery , wires, crocodile clips, bulbs, closed /open circuit,circuit/ simple series electrical circuit, flow, electricity,component/ elements, conductor, insulator, material, metal,lead;</p>	<p>Gather, record, classify and present data to help in answering questions. Use results to draw simple conclusions and make predictions. Identifying differences, similarities or changes related to different materials.</p>
5	<p>What will happen to the brightness of a bulb if I change the....?</p>	<ul style="list-style-type: none"> Plan an investigation for a fair test to assess the brightness of a lightbulb depending on a chosen variable Use the question boards to generate questions based on variables that can be changed 	<p>-cells,bulbs,component/ elements, closed /open circuit, flow, electricity, circuit/ simple series electrical circuit ; -variable, fair test, brightness, dimm, light, torch;</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p>

6	<p>What will happen to the brightness of a bulb if I change the....?</p>	<ul style="list-style-type: none"> • To investigate how different variables affect the brightness of a bulb • To make predictions before conducting the investigation • To draw conclusions based on their investigation 	<p>-cells, battery, wires, crocodile clips, bulbs, component/ elements, closed /open circuit, flow, electricity, circuit/ simple series electrical circuit, ; -variable, fair test, brightness, brighter, dimmer, light, voltage, size, torch,</p>	<p>Set up simple practical enquiries, comparative and fair tests. Ask relevant questions and use different types of scientific enquiries to answer them. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Making systematic and careful observations. Use straightforward scientific evidence to answer questions or to support their findings.</p>
7	<p>What is a switch?</p>	<ul style="list-style-type: none"> • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs and switches. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. 	<p>-cells, battery, wires, crocodile clips, bulbs, closed /open circuit, flow, electricity, circuit/ simple series electrical circuit, component/ elements, switch, open, close, on, off, on/off switch, push switch, toggle switch and slide switch ;</p>	<p>Make systematic and careful observations. Set up simple practical enquiries. Record findings using simple scientific language, drawings and labelled diagrams. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p>

8	How to make a switch?	<ul style="list-style-type: none"> • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs and switches. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • To use insulating materials to make a switch 	-cells, battery , wires, crocodile clips, bulbs, closed /open circuit, flow, electricity, component/ elements,circuit/ simple series electrical circuit, switch, open , close, on, off, on/off switch, push switch, toggle switch and slide switch ;	Set up simple practical enquiries. Identify differences, similarities or changes related to simple scientific ideas.
9	What alternative energy sources are used around the world? Self assessment (see initial DA)	<ul style="list-style-type: none"> • What alternative sources of energy are used around the world? • Why do we need alternative sources of energy? • Do these sources ever end? Why? 	energy sources, sun, solar, water, tidal, wind, energy, produce	, Classify/ sort alternative sources of energy.
10	Cultural Capital Visitor, visit, scientist			
11	Rising Stars end of unit assessment	Teacher to identify any gaps and recap		

Year 4- Animals Including Humans

Lesson number	Lesson question	Pupils will learn	Key Vocabulary	Working Scientifically Skills
1	Rising stars assessment Front cover (KWL) Knowledge organiser What do you think you know? What you do not know? What would you like to know?	Teacher assessment		
2	What are the parts of the digestive system? What are their functions? Simulation of the digestive system lesson	<ul style="list-style-type: none"> • To describe the simple functions of the basic parts of the digestive system in humans. • To introduce the main body parts associated with the digestive system. • To discuss their ideas about the digestive system and compare them with models or images. 	-mouth,tongue,teeth, oesophagus, stomach,liver, small intestine and large intestine, rectum, digestion, digestive system, enzymes, faeces, colon, gastric juice;	<ul style="list-style-type: none"> • Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries. • Making systematic and careful observations.
3	What are the parts of the digestive system? What are their functions?	<ul style="list-style-type: none"> • To describe the simple functions of the basic parts of the digestive system in humans. • To introduce the main body parts associated with the digestive system. • To discuss their ideas about the digestive system and compare them with models or images. 	-mouth,tongue,teeth, oesophagus, stomach,liver, small intestine and large intestine, rectum, digestion, digestive system, enzymes, faeces, colon, gastric juice;	<ul style="list-style-type: none"> • Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries. • Making systematic and careful observations. • Recording findings

				<p>using simple scientific language, drawings and labelled diagrams.</p> <ul style="list-style-type: none"> • Reporting on findings from enquiries, including oral and written explanations.
4	<p>How many different types of teeth do humans have? What is their function?</p>	<ul style="list-style-type: none"> • To identify the different types of teeth in humans and their simple functions. • To compare teeth of carnivores, herbivores and omnivores. 	<p>-tooth, teeth, function,grind, tear, bite, crush, jaw, incisor, premolar, molar,canine, wisdom teeth, herbivore, carnivore, omnivore;</p>	<ul style="list-style-type: none"> • Making systematic and careful observations. • Recording findings using simple scientific language, drawings and labelled diagrams.
5	<p>How many different types of teeth do humans have? What is their function? -modelling lesson-</p>	<ul style="list-style-type: none"> • To identify the different types of teeth in humans and their simple functions • To create a model of human teeth paying attention to their shape. 	<p>-tooth, teeth, function,grind, tear, bite, crush, jaw, incisor, premolar, molar,canine, wisdom teeth;</p>	<ul style="list-style-type: none"> • Gathering,recording , classifying and presenting data in a variety of ways to help in answering questions. • Identifying differences, similarities or changes related to simple scientific ideas and processes.

6	<p>What damages your teeth? How do you take care of your teeth?</p>	<ul style="list-style-type: none"> • To find out what damages teeth • To draw conclusions on how to look after our teeth. 	<p>-tooth, teeth, function,grind, tear, bite, crush, jaw, incisor, premolar, molar,canine, wisdom teeth;</p>	<p>Choose switched on science activities</p>
7	<p>What damages our teeth?</p>	<ul style="list-style-type: none"> • To find out what damages teeth • To draw conclusions on how to look after our teeth. • To find out the effects of different liquids on our teeth. 	<p>-cavity, filling, tooth paste,</p>	<ul style="list-style-type: none"> • Gathering,recording , classifying and presenting data in a variety of ways to help in answering questions. • Set up simple practical enquiries and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

				<ul style="list-style-type: none"> Using results to draw simple conclusions, suggest improvements and raise further questions. Identifying differences, similarities or changes related to simple scientific ideas and processes.
8	<p>What is the structure of a tooth?</p> <p>What are the stages of decay?</p>	<ul style="list-style-type: none"> To identify the different parts of a tooth. To list the stages of tooth decay. 	-cavity, filling, tooth paste,	<ul style="list-style-type: none"> Recording findings using simple scientific language, drawings and labelled diagrams.
9	<p>What is a food chain?</p>	<ul style="list-style-type: none"> To identify producers, predators and prey. To build a food chain. 	<p>Food chain, product, primary consumer, secondary consumer, energy, survive, herbivores, omnivores</p>	<ul style="list-style-type: none"> Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings and

				labelled diagrams.
10	What is a food web?	<ul style="list-style-type: none"> To explain what a food web is. To identify differences and similarities between food chains and food webs. 	Food chain, product, primary consumer, secondary consumer, energy, survive, herbivores, omnivores, food web	<ul style="list-style-type: none"> To identify differences, similarities or changes related to simple scientific ideas. Asking relevant questions and using different types of scientific enquiries to answer them.
11	Cultural Capital Visit, visitor, scientist			
12	Rising Stars end of unit assessment	Teacher to identify any gaps and recap		

Year 4- Sound

Lesson number	Lesson question	Pupils will learn	Key Vocabulary	Working Scientifically Skills
1	Rising stars assessment Front cover (KWL) Knowledge organiser What do you think you know? What you do not know? What	Teacher assessment		

	would you like to know?			
2	How are sounds made?	<ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. 	<ul style="list-style-type: none"> - Sound; vibrates; vibration; pluck / strum; guitar; observe; vocal cords; beat; drum / drum skin; tuning fork; musical instruments; air; sound waves; travel; particles; ears; collide. 	<ul style="list-style-type: none"> - Asking relevant questions and using different types of scientific enquiries to answer them. - Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment. - Recording findings using simple scientific language.
3	How does sound travel through solids?	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> - Hangers; sound waves; sound; vibrates; vibration; loud(er); investigation; air; ears; travel; particles; molecules; substance; atoms; bond; collide; lost; solid; 	<ul style="list-style-type: none"> - Setting up simple practical enquiries, comparative and fair tests. - Using straightforward scientific evidence to answer questions or to support their findings.

		<p>strength of the vibrations that produced it.</p>		<ul style="list-style-type: none"> - Making systematic and careful observations. - Reporting on findings from enquiries, including oral and written explanations.
4	<p>How does sound travel through a cup phone? How does the medium affect the volume of the sound?</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> - Sound; louder; clearer; quieter; size of the vibration; gases; liquids; solids; sound waves; sound; vibrates; vibration; cup phones; investigation; air; ears; travel; particles; molecules; substance; atoms; bond; collide; lost; distance; quickly; softer; weaker. 	<ul style="list-style-type: none"> - Setting up simple practical inquiries. - Making systematic and careful observations. - Identifying differences, similarities or changes related to simple scientific ideas and processes.
5	<p>How does the frequency of sound waves impact the sound that we hear?</p>	<ul style="list-style-type: none"> • Find patterns between the pitch of a sound and features of the object that produced it. 	<ul style="list-style-type: none"> - Sound waves; substances; travel; solids, liquids, gases; molecules; vibrate; atoms; bond; invisible; pitch; high; 	<ul style="list-style-type: none"> - Making systematic and careful observations. - Gather, record and classify and present

			low; frequency; flute; tuba; squashed / squished; short; long; back / forth; slowly; quickly; spread out.	data in a variety of ways to help in answering questions.
6	What is the pitch of a sound?	<ul style="list-style-type: none"> Find patterns between the pitch of a sound and features of the object that produced it. 	<ul style="list-style-type: none"> Sound waves; substances; travel; volume; string; thickness; record; length; amount, thicker / thinner, more / less, fewer, solids, liquids, gases, molecules, vibrate, atoms, bond, invisible, pitch, high, low, frequency, flute, tuba, squashed / squished, short, long, back / forth, slowly, quickly, spread out. 	<ul style="list-style-type: none"> Setting up simple practical inquiries. Gather, record and classify and present data in a variety of ways to help in answering questions.
7	How does the sound change as the distance from the sound source changes?	<ul style="list-style-type: none"> Recognise that sounds get fainter as the distance from the sound source increases. 	<ul style="list-style-type: none"> Volume, high pitch, vibrate, instruments, sound waves, low pitch, quiet, pluck, ear drum, echo, loud, loudness, sound source, distance, prediction, nearer / further, fainter, fair 	<ul style="list-style-type: none"> Recording findings using simple scientific language. Making systematic and careful observations. Reporting on

			<p>test, variable, measure, unclear; air; particles; energy; travel; pinna, blow, listen, sound.</p>	<p>findings from enquiries, including oral and written explanations.</p> <ul style="list-style-type: none"> - Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. - Using straightforward scientific evidence to answer questions or to support their findings.
8	<p>What material is most effective in muffling an alarm clock?</p>	<ul style="list-style-type: none"> • Identify best insulation against sound. 	<ul style="list-style-type: none"> - muffle, sound, sound source, material, decibel, length, thickness, decibel metre, variable, loudness, foil, silk, baking paper, tissue paper; fabric, foam sheet, predict, less / more, quieter, volume, smaller / larger, compare, highest, measure, 	<ul style="list-style-type: none"> - Using straightforward scientific evidence to answer questions or to support their findings. - Setting up simple practical inquiries, comparative and fair tests. - Making systematic and careful

			louder.	observations. - Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
9	How fast is the speed of sound?	<ul style="list-style-type: none"> • Explain that sound moves as a wave; • Explain how the medium affects the speed of sound. 	<ul style="list-style-type: none"> - amplitude, echo, pitch, sonic boom, sound wave, speed of sound; vibrate; volume; wave length; decibel, frequency, ear drum, faster, sound, electromagnetic, thunder, lightning, timer, speed = distance / time, m/s. 	<ul style="list-style-type: none"> - Recording findings using simple scientific language. - Using straightforward scientific evidence to answer questions or to support their findings. How do
10	How Does the shape of the ear affect hearing?			
11	Cultural Capital visit, visitor, scientist			
12	Rising Stars end of unit	Teacher to identify any gaps and plan		

	assessment	recap		
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Year 4- States of Matter

Lesson number	Lesson question	Pupils will learn	Key Vocabulary	Working Scientifically Skills
1	Rising stars assessment Front cover (KWL) Knowledge organiser What do you think you know? What you do not know? What would you like to know?	Teacher assessment		
2	What Properties Have Solids, Liquids and Gases Got?	To compare and group materials together, according to whether they are solids, liquids or gases.	States of matter; solids; liquids; gases; particles; compressed; molecules; oxygen; methane; properties	- Identifying differences, similarities or changes related to simple scientific ideas and processes.
3	What Material Is the Best to Stop the Ice from Melting? -ice cube investigation-	To observe that some materials change state when they are heated or cooled.	Arrangement of molecules, state of matter; solids; liquids; gases; carbon dioxide; compressed; melt/melting; variable; material; prediction;	- Setting up simple practical enquiries, comparative and fair tests - Making systematic

			experiment; helium; change; particles; insulate; insulator; conduct; heat; cold; largest	and careful observations. - Asking relevant questions and using different types of scientific enquiries to answer them.
4	Are All Solids the Same? -biscuit experiment-	Investigate and describe how particles move in solids and discuss the properties of solids and liquids.	Arrangement of molecules, state of matter; solids; liquids; gases; compressed; variable; material; prediction; change; particles; squeeze; experiment; properties; bond; densely; arranged in patterns; mould; granular materials; solid matter; fixed shape; vibration; flow; move/move freely; close; space; quickly.	- Setting up simple practical enquiries, comparative and fair tests - Identifying differences, similarities or changes related to simple scientific ideas and processes.
5	What Properties Have Gases Got? -investigations- Choose your activities from switched on science resource	To explore a variety of everyday materials and develop simple descriptions of the states of matter	Carbon dioxide , expand , float, gas, evaporate, inflate , raisins, nucleation ; properties; compressed; diffused; fizz; bubbles; released; dissolved; pressure; decreases; liquid phase; lemonade.	- Making systematic and careful observations. - Recording findings using simple scientific language - Using results to draw simple conclusions, make predictions for new values, suggest improvement and

				<p>raise further questions</p> <ul style="list-style-type: none"> - Using straightforward scientific evidence to answer questions or to support findings.
6	<p>Do States of Matter Change? -planning an investigation-</p>	<ul style="list-style-type: none"> - To be able to carry out a fair test - To be able to make careful observations - To be able to draw a conclusion based on their findings 	<p>Solid; liquid; gas; chemical reaction; citric acid; sodium bicarbonate; fizz; variables (independent/dependent) test; measure; observe; amount; temperature; time taken; material; container; prediction; equipment; pop.</p>	<ul style="list-style-type: none"> - Asking relevant questions and using different types of scientific enquiries to answer them. - Using results to draw simple conclusions, make predictions for new values, suggest improvement and raise further questions;
7	<p>Do States of Matter Change? -investigation-</p>	<ul style="list-style-type: none"> - To be able to carry out a fair test - To be able to make careful observations - To be able to draw a conclusion based on their findings 	<p>Solid; liquid; gas; chemical reaction; citric acid; sodium bicarbonate; fizz; variables (independent/dependent); change; keep the same; test; measure; observe; amount; temperature; time taken; material; container; prediction; equipment; pop;</p>	<ul style="list-style-type: none"> - Asking relevant questions and using different types of scientific enquiries to answer them. - Using results to draw simple conclusions, make predictions for new values, suggest improvement and

				raise further questions;
8	What is the Water Cycle?	To be able to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Water cycle; evaporate; evaporation; change; solid; liquid; gas; condensation; mist; dry; droplet; precipitation; hydrological cycle; H2O; water; accumulation; lakes; rivers; oceans; boiled; vapour; heat up; steam; clouds; temperature; release; snow; collect; rain; body of water; sun; fresh water; ground run off; underground water; temperature; cools, rise, process, warmed, infiltration; sea; air; wind.	- Using straightforward scientific evidence to answer questions or to support findings.
9	Cultural Capital Visit, visitor, scientist			
10	Rising Stars end of unit assessment Revision of the whole unit	Teacher to identify any gaps and plan recap		

Year 4- Living things and their Habitats

Lesson number	Lesson question	Pupils will learn	Key Vocabulary	Working Scientifically Skills
1	Rising stars assessment Front cover (KWL) Knowledge organiser What do you think you know? What you do not know? What would you like to know?	Teacher assessment		
2	How Can Living Things Be Grouped?	Understand that living things can be grouped in a variety of ways. Compare and contrast living things.	-living things, animal, vertebrate, invertebrate, mammal, bird, fish, reptile, amphibian, insect, mollusc, -legs, wings, antennae, feathers, shell, tail;	Asking relevant questions and using different types of scientific enquiries to answer them.
3	Do Habitats Change? How Is This Affecting Living Things?	Recognise that environments can change and that this can sometimes pose dangers to living things. Identify how the habitat changes throughout the year. Explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and	-habitat, Arctic, Antarctica, rainforest, desert, savannah, pond, climate change, greenhouse effect; -thermometer;	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions.

		the negative effects of population and development, litter or deforestation.		Record findings using simple scientific language and tables
4	How Can Vertebrates Be Grouped?	<p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>Put vertebrate animals into groups, for example: fish, amphibians, reptiles, birds, and mammals.</p>	-vertebrate, invertebrate, mammal, bird, fish, reptile, amphibian, insect, mollusc,	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Use straightforward scientific evidence to answer questions.</p>
5	Can You Classify and Sort These Living Creatures?	<p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>Use and make simple guides or keys to explore and identify local plants and animals.</p> <p>Identify living creatures based on various criteria and features. Sort living things based on given criteria.</p>	<p>-living things, animal, vertebrate, invertebrate, mammal, bird, fish, reptile, amphibian, insect, mollusc,</p> <p>-legs, wings, antennae, feathers, shell, tail;</p>	
6	Cultural Capital			
7	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

	Revision of the whole unit			
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Notes for this unit to refer back to

Put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.

Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses.

Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation.

BELL LANE YEAR 5 SCIENCE CURRICULUM MAP

	AUTUMN 1	AUTUMN 2	SPRING 1	Spring 2	SUMMER 1	SUMMER 2
Unit of Work National curriculum	Earth and space	Forces	Properties and Changes of Materials	Properties and Changes of Materials	Animals including humans	Living things and their habitats

Year 5- Living things and their Habitats

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2	What do plants need to grow? (Recap)	<ul style="list-style-type: none"> What plants need to allow themselves to grow. 	<ul style="list-style-type: none"> germination roots leaves flowering seed dispersal 	Identifying scientific evidence that has been used to support or refute ideas or arguments.
3	How do new plants grow from different parts of a parent plant?	<ul style="list-style-type: none"> To observe the processes of germination and growth. 	<ul style="list-style-type: none"> seed shoot germinate root leaves growth 	Investigation/ comparative/ observation

4	What do the parts of the flowers do?	<ul style="list-style-type: none"> To identify the different parts of the plants and the function of each part Why some plants have flowers 	<ul style="list-style-type: none"> fertilisation stamen sepal petal seed dispersal germination pollination 	
5	How do plants reproduce?	<ul style="list-style-type: none"> To be able to name and place in order the different parts of the life cycle of a plant. To explain how some flowering plants reproduce 	<ul style="list-style-type: none"> pollination pollen cross pollination flower nectar anthers 	
6	Do all fruits have similar seeds?	<ul style="list-style-type: none"> To compare seeds of different fruits or plants 		
7	What are the different methods of seed dispersal?	<ul style="list-style-type: none"> How seeds disperse and find new places to germinate and grow. 	<ul style="list-style-type: none"> disperse germinate grow 	Prediction
8	What is the life cycle of an animal? How does it compare to a human?	<ul style="list-style-type: none"> To understand the lifecycle of a mammal To compare different life cycles 	<ul style="list-style-type: none"> embryo young adult mammals 	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
9	How does the life cycle of an	<ul style="list-style-type: none"> Describe metamorphosis 	<ul style="list-style-type: none"> amphibians 	Recording data and results

	insect compare to an amphibian?	<ul style="list-style-type: none"> Describe and compare the main stages of the life cycle of an insect and an amphibian 	<ul style="list-style-type: none"> metamorphosis embryos larva pupa Insect nymphs tadpole life cycle 	of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
10	Why do birds lay eggs?	<ul style="list-style-type: none"> To identify the stages of a bird's life cycle To label the parts of an egg To describe how some birds attract a mate. 	<ul style="list-style-type: none"> chicken chicks hatchling fledgling nestling 	Choose activities from switched on science resource
11 12	Are the life cycles of all mammals the same? What are the differences in the life cycles of a mammal, an amphibian, an insect and a bird?	<ul style="list-style-type: none"> Describe the process of sexual reproduction Describe and compare the lifecycle of different types of mammal Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. 	<ul style="list-style-type: none"> sexual reproduction gestation placental marsupials mammals monotremes species species 	Report and present findings from enquiries, including conclusions.
13	Cultural Capital Visit, visitor, scientist			
14	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 5- Animals Including Humans

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2	Why do we need a skeletal system? (Recap from Year 3)	<ul style="list-style-type: none"> To be able to name the bones and their functions 		
3	What are the stages which indicate the growth and development of humans?	<ul style="list-style-type: none"> Describe the changes as humans develop to old age. 	<ul style="list-style-type: none"> foetus life cycle growth Development baby child teenager adult elder 	Choose activities from switched on science resource
4	How does the gestation period of humans and other animals compare?	<ul style="list-style-type: none"> To understand the difference between the gestation period of other animals and compare them with humans 	<ul style="list-style-type: none"> gestation 	research
5	How do our bodies change from birth to adulthood?	<ul style="list-style-type: none"> To explore body changes from birth to adulthood. To be able to explain the four developmental stages for 	<ul style="list-style-type: none"> Organism Adolescent Life cycle foetus 	Researching the gestation periods of other animals and comparing them with humans

		humans.		
6 7	What happens to the skeletal system as humans grow older?	<ul style="list-style-type: none"> • To be able to set up a comparative test. • To make connections with human growth and changes in the skeletal system • Pupils should draw a timeline to indicate stages in the growth and development of humans. 		<p>Comparative testing</p> <p>Find out and record the length and mass of a baby as it grows.</p>
8	What is puberty? Why does it occur? (SRE)	<ul style="list-style-type: none"> • To explain the main physical and emotional changes that happen during puberty. • To be able to ask questions about puberty with confidence. 	<ul style="list-style-type: none"> • sex hormones • female reproductive system • Male reproductive system • oestrogen • testosterone • progesterone 	
9	Cultural Capital Visit, visitor, scientist	-		
10	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 5- Properties and Changes of Materials

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2	What are the different states of matter?	<ul style="list-style-type: none"> Recap knowledge on different states of matter from previous years. 	<ul style="list-style-type: none"> Matter Air Gas Liquid 	Use the PLAN matrices to look back at previous learning
3 4	What are the properties of everyday objects?	<ul style="list-style-type: none"> To 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. 	<ul style="list-style-type: none"> Properties Solid Liquid Gas 	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Reporting and presenting findings from enquiries, including conclusions, casual relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</p>
5 6	Do all materials dissolve?	<ul style="list-style-type: none"> Know that some materials will dissolve in liquid to form a solution, and describe how to 	<ul style="list-style-type: none"> Dissolving Solution Substance 	Plan different types of scientific enquiries to answer questions, including

		recover a substance from a solution	<ul style="list-style-type: none"> • Soluble • Transparent • Fair test 	<p>recognising and controlling variables where necessary</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p>
7	What variables affect the time in which a substance takes to dissolve?	<ul style="list-style-type: none"> • Know how different variables affect time taken for sugar to dissolve in water • Explain that changing the variable can affect how quickly a substance dissolves. 	dissolve, elastic, electrical conductor, evaporate, filter, flexible, hard, insoluble, mixture, plastic, rigid, soluble, solute, solution, solvent, strong, thermal conductor, thermal insulator, tough	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
8 9	How do you conduct a fair test?	<ul style="list-style-type: none"> • To understand the different processes involved in both organising and conducting a fair test. • Different materials dissolve at a faster and slower rate, dependent on the variable used. 	<ul style="list-style-type: none"> • Variable • Fair • Independent and dependent variable • Controlled variable • 	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables when necessary.
10 11	What types of substances can be separated using filtering?	<ul style="list-style-type: none"> • Use of knowledge of solids, liquids and gases, to decide how mixtures might be 	<ul style="list-style-type: none"> • Filtering, • Solution • Dissolve 	Using test results to make predictions to set up further comparative and fair tests.

		<p>separated, including through filtering, sieving and evaporation.</p>	<ul style="list-style-type: none"> • Solvent • Soluble • Mixture • funnel 	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p>
12 13	<p>How can we separate a solution?</p>	<ul style="list-style-type: none"> • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating <p>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p>	<ul style="list-style-type: none"> • Dissolve • Soluble • Solution • Solvent 	<p>use test results to make predictions to set up further comparative and fair tests</p> <p>identify scientific evidence that has been used to support or refute ideas or arguments</p>
14	<p>What is the best material for filtering?</p>	<ul style="list-style-type: none"> • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating 	<ul style="list-style-type: none"> • Filtering • Mixtures • Sieving • Evaporating 	<p>report and present 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</p>
15	<p>What is a thermal insulator?</p>	<ul style="list-style-type: none"> • give reasons, based on 	<ul style="list-style-type: none"> • Thermal 	<p>Taking measurements, using</p>

		<p>evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Insulator Pattern-seeking Temperature 	<p>a range of scientific equipment, with increasing accuracy and precision, taking repeat findings when appropriate.</p>
16	Are changes of state reversible?	<ul style="list-style-type: none"> Demonstrate that dissolving, mixing and changes of state are reversible changes. 	<ul style="list-style-type: none"> Reversible Melting Boiling Freezing Dissolution Change State Dissolving 	<p>Reporting and presenting findings from enquiries, including conclusions, casual relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</p>
17 18	Why that material?	<ul style="list-style-type: none"> To give reasons, based on evidence from comparative and fair tests, for the particular 	<ul style="list-style-type: none"> Thermal insulator Transparent Elastic 	<p>Identifying scientific evidence that has been used to support or refute</p>

		<p>uses of everyday materials, including metals, wood and plastic</p> <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Electrical conductor • Absorbant • Rigid • Flexible 	ideas or arguments.
19 20	How can we create new materials?	<ul style="list-style-type: none"> • 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. 	changes, formation, new materials, reversible, irreversible, burning, acid, action	Identify scientific evidence that has been used to support or refute ideas or arguments.
21	Cultural Capital Visit, visitor, scientist			
22	Recap and review whole unit	Revision lesson	Whole unit vocabulary	
23	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 5-Earth and Space

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2 3	What is the distance of each planet in relation from the sun? How does the Earth, and other planets move in relation to the Sun in the solar system?	<ul style="list-style-type: none"> • How each planet is situated in our solar system • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system 	<ul style="list-style-type: none"> • Scale • Planets • Solar system • Approximately spherical • Rotating • distance 	Taking measurements, using a range of specific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
4	What is at the centre of our solar system?	<ul style="list-style-type: none"> • To understand how our solar system is distributed. 	<ul style="list-style-type: none"> • Rotation • Orbit • 	Choose scientific skills and activities from switched on science resources.
5	How do we get day and night?	<ul style="list-style-type: none"> • How the earth's rotation affects daylight. • How to create a sundial. 	<ul style="list-style-type: none"> • Daylight • Length 	
6	How are the moon phases created?	<ul style="list-style-type: none"> • To understand how the moon's orbit affects the phases of the moon. 	<ul style="list-style-type: none"> • Phases • Orbit • Geocentric • Heliocentric • Time zone • Sun • Star 	Report and present 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.

				Identify scientific evidence that has been used to support or refute ideas or arguments.
7	What are the moon phases?	<ul style="list-style-type: none"> To understand the different phases of the moon. To describe the movement of the Moon relative to the Earth 	<ul style="list-style-type: none"> Phases Lunar 	Choose activities from switched on science resources.
8	How is our knowledge of space changing?	<ul style="list-style-type: none"> To carry out research on how our knowledge of space is evolving 	<ul style="list-style-type: none"> Contemporary 	Identifying scientific evidence that has been used to support or refute ideas or arguments.
9	Cultural Capital Visit, visitor, scientist	Science Museum		
10	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 5- Forces

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		

2	What is force? Is gravity a force ?	<ul style="list-style-type: none"> • How forces interact • What a force is • The effects a force can have • What gravity is and how it impacts our world. 	Force, Gravity, Earth Push, Pul, Squeeze Stretch, Catch Twist, Mass, Weight	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
3	What does a Newton Meter measure?	<ul style="list-style-type: none"> • How to use a Newton Meter • What a newton Meter measures • How a newton metre works • The relationship between mass, weight and gravity. 	Newton Meter Units of force Mass Weight Force, gravity	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeated readings when necessary.
4	What is the difference between air resistance and gravity?	<ul style="list-style-type: none"> • To notice the differences between different forces, such as air resistance and gravity. 		
5	How does the surface area of a material affect air resistance?	<ul style="list-style-type: none"> • To consider what affects air resistance • To explore how air resistance can be helpful/unhelpful 	Air resistance Gravity Units of force Galileo Helpful and unhelpful forces Opposing forces Surface area Controlled variables Independent variables Dependent variables	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables.</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Using test results to make</p>

				predictions to set up further comparative and fair tests.
6	What is friction?	<ul style="list-style-type: none"> • What friction is • To identify friction in our everyday lives • Consider how friction can be useful/unhelpful • Investigate which materials affect friction • Make links between friction and resistance forces (air and water) 	Drag Friction Resistance Pull Push Surfaces Heat Force opposite direction Prediction	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.
7	How do we lift heavy items?	<ul style="list-style-type: none"> • What a lever is • How levers work • Where might we use levers? • That there are different types of levers 	Lever Force Load Fulcrum Simple machine	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.
8	How do forces interact on a pulley?	<ul style="list-style-type: none"> • What is a pulley? • Why do we use pulleys? • How pulleys work - what makes pulley's efficient • Where can we see pulleys in everyday 	Pulley Simple machine Wheel Groove Axle	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables.

		lives		
9	Cultural Capital Visit, visitor, scientist			
10	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

BELL LANE YEAR 6 SCIENCE CURRICULUM MAP

	AUTUMN 1	Autumn 2	SPRING 1	Spring 2	SUMMER 1	SUMMER 2
Unit of Work National curriculum	Light	Electricity	Evolution and inheritance	Evolution and inheritance	Animals including humans	Living things and their habitats

Year 6 - Light

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL)	Teacher assessment		

	Knowledge organiser			
2	What is light and how does it travel?	<ul style="list-style-type: none"> • Define light and dark • Describe different light sources • Investigate how light travels 	Light, light source, dark, absence of light, Straight line	Sorting Exploration
3	How do we see light?	<ul style="list-style-type: none"> • Name the parts of the eye • Describe how the lenses in glasses work 	Light, light source, dark, absence of light, lense	Modelling
4	Where do different colours come from?	<ul style="list-style-type: none"> • How white light is split into different colours • Primary and secondary colours of light • How a rainbow is made 	Spectrum Absorb, reflect Wave length Wave length Frequency	Research
5.	What is reflection and how can we use it?	<ul style="list-style-type: none"> • What happens to light when it is reflected • Describe different types and uses of reflection • Investigating mirrors. 	transparent, translucent, opaque, shiny, matt, surface, shadow, reflect,	Explore

6.	Investigating different types of mirrors. What are their uses?	<ul style="list-style-type: none"> Define what a convex and concave mirror is. Identify the different uses of mirrors. 	Concave Convex Surface Curved Outwards Inwards Wider Enlarge	Explore
7	What is refraction and how can we use it?	<ul style="list-style-type: none"> What happens to light when it refracts Identify whether reflection or refraction has taken place 	Light, light source, dark, absence of light, Wave length	Explore
8	What factors affect the size, shape or type of shadow?	<ul style="list-style-type: none"> Plan and carry out a fair test Use results to write a conclusion. 	Light source Light Shadow Block Opaque Translucent Transparent	Plan a fair test. Write a conclusion.
9	What are some uses of light?	<ul style="list-style-type: none"> Build a shadow puppet theatre How does a periscope or kaleidoscope work? How different types of lenses work 	Light Light course Reflect Images	Model Research

10	Who invented the concept of cats eyes?	<ul style="list-style-type: none"> • What is Percy Shaw famous for? • Investigate how do cats' eyes work? • Which animals' eyes do or do not glow in the dark? 	Reflect Light source	Research
11	<p>Cultural Capital</p> <p>Visitor, visit, scientist</p>			
12	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 6- Electricity

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
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1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2	What is static electricity?	<ul style="list-style-type: none"> Describe what static charge is Describe how to create a build up of static charge How a build up of charge can lead to sparks through the air 	Positive Negative Charge Attract Repel Balanced Unbalanced	Explore Explanation
3	What are the different components in an electrical circuit?	<ul style="list-style-type: none"> Describe the parts of an electrical circuit and the symbols they are represented by. Explain how electricity in a circuit is different to static electricity State the conditions for electricity to flow in a circuit. (conductor and insulator exp) 	Components Flow Break Circuit	Comparative testing Predict Conclude
4	Will the circuit work?	<ul style="list-style-type: none"> Identify if a circuit will work. 	Components Flow Break Circuit	Predict Explore Conclude
5	What happens in a circuit when we change the components?	<ul style="list-style-type: none"> Ask questions that can be answered using a fair test. Plan a fair test. Can write a prediction for what 	Enquiries Variables Fair test Comparative test	Asking questions Planning

		will happen when we change the components in a circuit	Components Flow Break Circuit	
6	What happens in a circuit when we change the components?	<ul style="list-style-type: none"> • Carry out an investigation to test your prediction • Evaluate whether your prediction was correct or not using your results 	Enquiries Variables Fair test Comparative test Components Flow Break Circuit	Fair test Comparative test
7	What is the difference between a series and parallel circuit?	<ul style="list-style-type: none"> • Explain the difference between a series and parallel circuit. • Identify the two types of circuits. • Identify uses of the two types of circuits. 	Series circuit Parallel circuit Flow Components Break Switch Current	Explore Predict
8	Design an electrical game.	<ul style="list-style-type: none"> • Design a game that uses a circuit. • Evaluate the design and suggest improvements. 	Design Test Evaluate Series circuit Parallel circuit Flow Components Break	modelling

			Switch Current	
9	Cultural Capital Visitor, visit, scientist			
10	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 6- Evolution and Inheritance

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2	What are fossils and how are they formed?	<ul style="list-style-type: none"> What a fossil is and how it is made What fossils show us about changes in species over time 	Sediment Palaeontologist excavate	Modelling
2	What is the Theory of Evolution? How does it help explain	<ul style="list-style-type: none"> How random changes in characteristics can lead to an advantage in an organism How the survival of these 	vary, characteristics, suited, adapted,	Research Conclusion

	adaptation?	<p>organisms leads to evolution</p> <ul style="list-style-type: none"> • How Charles Darwin came up with the theory of evolution 	environment,	
3	Which organisms lived during each era of time?	<ul style="list-style-type: none"> • Which groups of organisms existed in each period • The reasons why some organisms became extinct 	vary, characteristics, suited, adapted, environment, Extinct	Research
4	How do animals survive in changing habitats during winter?	<ul style="list-style-type: none"> • What are the different types of hibernations? • How do animals survive in winter? • What adaptations do animals undergo to survive in winter? 	Adaptation Suited Environment Hibernation	Research
5	How do animals survive during summer?	<ul style="list-style-type: none"> • How do animals survive in summer? • What adaptations do animals undergo to survive in summer? • Adaptation may lead to evolution. 	Adaptation Suited Environment Hibernation	Research
6	<p>What are traits?</p> <p>How do we know that traits are inherited?</p> <p>How are offspring similar and dissimilar to their parents?</p>	<ul style="list-style-type: none"> • living things produce offspring of the same kind • offspring vary and are not identical to their parents 	Heredity Offspring	<p>Sorting</p> <p>Data collection</p> <p>conclusion</p>
7	Cultural Capital			

	Visitor, visit or scientist			
8	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 6- Animals Including Humans

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2	What are the main parts of the human circulatory system?	<ul style="list-style-type: none"> What are the functions of the heart, blood and blood vessels in the human circulatory system? 	Heart Lungs Exchange Gases Arteries Veins	Modelling
3	What is pulse rate and what are the factors that affect it? Does it take a shorter time for the pulse to get back to normal	<ul style="list-style-type: none"> How can the factors affecting the pulse rate be investigated? 	Heart Lungs Exchange Gases Arteries Veins	Comparative test

	in younger people? Does the resting pulse rate change with age?			
4	Do men/boys have a different resting pulse rate than women?	<ul style="list-style-type: none"> Compare the effect of different factors on human pulse rate. 	Resting pulse Blood pressure	Comparative test
5	What is the impact of diet, exercise, drugs and lifestyle on the way their bodies function?	<ul style="list-style-type: none"> Know the importance of good diet To be able to explain the impact of drugs and wrong lifestyle on human body. 	diet, exercise, drugs, lifestyle	Comparative test Research
6	How are nutrients and water transported within humans?	<ul style="list-style-type: none"> 	Nutrients Exchange	
7	Cultural Capital Visit, visitor, scientist			
8	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Year 6 - Living things and their habitats

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1	Rising stars assessment Front cover (KWL) Knowledge organiser	Teacher assessment		
2	What are the main animal groups and what are their main features? (recap from Yr 5)	<ul style="list-style-type: none"> To be able to classify and identify animals based on their characteristics. 	Mammals Fish Amphibians Reptiles Vertebrate Invertebrates	Sort classify
3	How can invertebrates be classified? Activity 1 Quick classifications	<ul style="list-style-type: none"> To be able to identify main features of invertebrates. 	Invertebrates, insects, spiders, snails, worms,	Research
4	Activity 2 Classifying the local environment			
5	How are plants classified?	<ul style="list-style-type: none"> To be able to name and classify plants into two main groups. 	flowering, non-flowering	Research
6	CARL LINNAEUS			
7	Bacteria			

8	Fabulous fungi			
9	Cultural Capital Visit, visitor, scientist			
10	Rising Stars end of unit assessment	Teacher to identify any gaps and plan recap		

Optional units

Year 6- History of Science

Lesson number	Lesson question	Pupils will learn (Substantive knowledge)	Key Vocabulary	Working Scientifically Skills (Disciplinary knowledge)
1.	How do scientific ideas change?	<ul style="list-style-type: none"> Describe the scientific process How scientific ideas are challenged in science How knowledge builds over time - using sound and the invention of the iphone as an example 	Scientific process Data / evidence Hypothesis /predict Cumulative Peer review Debate Collaboration	Research Sorting Comparing
2.	How has our understanding and use of electricity developed?	<ul style="list-style-type: none"> Timeline of major discoveries and inventions in relation to electricity Describe the contributions of Lewis Howard Latimer, Michael Faraday and Mildred Dresselhaus to our 	Electricity Static electricity Battery Filament Chronological	Research Sorting

		understanding of electricity		
3.	How has human use of materials changed over time?	<ul style="list-style-type: none"> • Timeline of material use • Compare raw vs synthetic materials • Debate whether humans have changed materials or have materials changed humans? 	Material Natural Synthetic Nano material Debate Metal Stone age Bronze age	Research Sorting Conclusion
4.	How has our understanding of the human body changed over time?	<ul style="list-style-type: none"> • Timeline of our understanding of human anatomy • How increased knowledge of our anatomy has led to medical advances • Describe the role of Charles Drew in the development of blood banks 	Anatomy Dissection Microscope Blood Surgery Tourniquets Transfusion Blood analysis Trephining	Comparative testing Research Conclusion
5.	How has the discovery of DNA changed science?	<ul style="list-style-type: none"> • Describe what DNA is • Story of the discovery of DNA • Scientific developments as a result of the discovery of DNA 	DNA/ double helix Inherited disease Cell Treatment cure	Explore (isolating DNA from onion cells)
6.	How have our ideas about the universe changed over time?	<ul style="list-style-type: none"> • Compare the geocentric and heliocentric models • Describe elliptical orbit 	Universe Geocentric Model Heliocentric model Orbit / elliptical paths Sun	Research

			Planets	
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