

Builds on LKS2 Animals including Humans - identify that humans and some other animals have skeletons and muscles for support, protection and movement. - describe the simple functions of the basic parts of the digestive system in humans.				
Types of Knowledge	Disciplinary Knowledge	Substantive Knowledge	Vocabulary	Experience
Will study...	Working scientifically – knowledge of how scientific knowledge is generated and grows.	The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.		
A SCIENTIST studying Biology – Animals and Humans  Living Organisms  Questions  Methods and Measurements  Data Analysis  Explanations	will understand ... Plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. Recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. Take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. Make my own decisions and select the most appropriate type of scientific enquiry to use and recognise how to set up a comparative and fair test. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	I know I know to describe the changes as humans develop to old age. I understand the changes that occur during puberty to a boy and a girl. I understand physical and mental changes that occur and these can affect the way that we behave. I can explore how we can manage and change news roles and responsibilities as we grow up. I can identify the range of feelings associated with change, transition to secondary school.	puberty, person, child, teenager, adult, changing, growing, physical, emotions, feelings, bodies, now, future change, life cycle, baby, toddler, child, adolescent, teenager, adult, middle-age, older person, growing up, feelings, emotions, independence Relationship, friendship, couple, , positive, qualities, values, expectations, responsibility, responsibilities Love, respect, consent,	To explore the changes that occur during puberty to a boy and a girl. Observe physical and mental changes that occur and these can affect the way that we behave. describe the physical and emotional changes that occur during puberty and how to manage these • identify myths and facts about puberty, and what is important for a young person to know • demonstrate how to begin conversations (or ask questions) about puberty with people that can help us Explore how we can manage and change news roles and responsibilities as we grow up. describe some changes that happen as we grow up • identify the range of

	Use test results to make predictions to set up further comparative and fair tests. 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. Use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. Develop and use keys and other information to classify and describe objects in ways to help answer questions. Justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. Identify scientific evidence that has been used to support or refute ideas or arguments. Predict outcomes and solve problems.		commitment, female, male, human, reproduction, sex, sexual intercourse, fertilised, sperm, ovum, penis, vulva, vagina, fallopian tubes, pregnancy, baby, foetus, uterus, womb, conception	feelings associated with change, transition to secondary school and becoming more independent • describe practical strategies to cope with growing up, becoming more independent and taking on new responsibilities What constitutes and positive and healthy relationship. identify different kinds of loving relationships • describe the qualities that enable these relationships to flourish • explain the expectations and responsibilities of being in a close relationship • recognise how relationships may change or end and what can help people manage this. Explore about adult relationships and the human life cycle • about human reproduction (how a baby is made and how it grows) identify the links between love, committed relationships / marriage, and conception • explain what sexual intercourse is, and explain that this may be one part of an intimate
--	---	--	--	--

				relationship between consenting adults • explain what pregnancy means, how long it lasts, and where it occurs, i.e. that a baby is made when a sperm (male) meets an egg /ovum (female) and then the fertilised egg settles into the lining of the uterus (or womb) (female)
--	--	--	--	--

UKS2 Cycle 1 – Autumn 2

Builds on LKS2 Electricity

- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- identify whether a lamp will light in a simple series circuit, based on whether the lamp is part of a complete loop with a battery.
- recognise that a switch opens and closes a circuit and associate this with whether a lamp lights in a simple series circuit.

Types of Knowledge	Disciplinary Knowledge	Substantive Knowledge	Vocabulary	Experience
Will study...	Working scientifically – knowledge of how scientific knowledge is generated and grows.	The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.		
A SCIENTIST studying Physics – Electricity  Physical World and Space    	will understand ... I can plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. I can recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. I can take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. I can make my own decisions and select the most appropriate type of scientific enquiry to use and recognise how to set up a comparative and fair test. I can record data and results of increasing complexity using scientific	I know I know that a circuit needs to be complete for an electric current to flow. I know a circuit is made up of different components. Why a circuit is not a complete circuit. How to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. How to compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. How to use recognised symbols when representing a simple circuit in a diagram.	appliances, battery, bulb, buzzer, cell, circuit, component, conductor, current, device, electricity energy, fuel, generate insulator, mains, motor power, resistance, resistor source, switch voltage, wires	Making different circuits using a range of components. Drawing diagrams of circuits. Investigating the brightness of bulbs / buzzer volumes in a circuits. Finding solutions to solve a fault in a circuit. Plan and conduct an investigation comparing different properties of wires and the affect they have on the brightness of bulbs. How does the length of wire effect an electrical circuit? How is the volume of a buzzer affected by the number and voltage of cells in a circuit? (Design a burglar alarm) Who is Benjamin Franklin? (Lightning)

	diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. I can 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. I can use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. I can develop and use keys and other information to classify and describe objects in ways to help answer questions. I can justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. I can identify scientific evidence that has been used to support or refute ideas or arguments.	The symbols that are used to represent a simple circuit. If a circuit is likely to work and explain why. how to alter the brightness of a bulb and explain the reasons for this.		
--	---	--	--	--

	I can predict outcomes and solve problems.			
--	--	--	--	--

UKS2 Cycle 1 – Spring 1				
Builds on from LKS2 States of Matter: • know how to compare and group materials together, according to whether they are solids, liquids or gases • know how to observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • know how to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature				
Types of Knowledge	Disciplinary Knowledge	Substantive Knowledge	Vocabulary	Experience
Will study...	Working scientifically – knowledge of how scientific knowledge is generated and grows.	The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.		

A SCIENTIST studying Chemistry – Properties and Changes of Materials     	I can Plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. Recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. Take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. Make my own decisions and select the most appropriate type of scientific enquiry to use and recognise how to set up a comparative and fair test. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. 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.	I know I know that different properties make materials suitable for different uses. I know how 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. I know that materials made of metal, plastic and rubber are made of a mixture of materials. I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. I know how to use my knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I know to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. I know how to demonstrate that dissolving, mixing and changes of state are reversible changes. I know that some changes, including baking, burning and the reaction of	solute, solvent, solution, dissolving, soluble, insoluble, saturated, mixture, reversible, irreversible, acid, alkali, PH scale, neutral, carbon dioxide, neutralisation, fire, burning, combustion, oxygen, carbon dioxide, fuel, mass.	What gases are produced when fire happens? Why does fire glow? What does combustion mean? Identifying solids that dissolve and solids that don't. List how to separate a mixture by order of ingredients and techniques. What happens when substances dissolve? Identifying solids that dissolve and solids that don't. How can you tell if a gas is being produced in a chemical reaction? How many drops of water will it take to dissolve solids? Repeat investigation on solubility with cinnamon observe differences What makes a difference in how rapidly a solid dissolves? How can we reverse changes through condensation? Test the reaction rates of bicarbonate of soda and acid. Is there a relationship between temperature and solubility? How can we reverse changes through condensation? Oil and lemonade mixture and the effect of adding salt on the combination. Observe solutions. Melting materials over hot water. Can everything burn? Can you write a chemical equation? What is an irreversible change? Separating rocks salt and pure salt Is ice water and steam the same substance? How do you make a solution?
---	---	---	---	--

	Use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. Develop and use keys and other information to classify and describe objects in ways to help answer questions. Justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. Identify scientific evidence that has been used to support or refute ideas or arguments. Predict outcomes and solve problems.	certain chemicals 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.		
--	--	---	--	--

UKS2 Cycle 1 – Spring 2

Builds on LKS2 – Light

- Know how to recognise that he/she needs light in order to see things and that dark is the absence of light.
- Know how to notice that light is reflected from surfaces.
- Know how to recognise that light from the sun can be dangerous and that there are ways to protect eyes.
- Know how to find patterns in the way that the size of shadows change.
- Know that it is not safe to look directly at the sun, even when wearing dark glasses.

Types of Knowledge	Disciplinary Knowledge	Substantive Knowledge	Vocabulary	Experience
Will study...	Working scientifically – knowledge of how scientific knowledge is generated and grows.	The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.		
A SCIENTIST studying Physics – Light  Physical World and Space    	I can I can plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. I can recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. I can take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. I can make my own decisions and select the most appropriate type of scientific enquiry to use and recognise how to set up a comparative and fair test.	I know I know that light appears to travel in straight lines. I know how to use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. I know how to explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. I know how to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. .	light source, light reflector, translucent, transparent, opaque, shadow, silhouette, hazard, reflection, ultraviolet, lens, convex, concave, diverge, converge, ray.	Examine different materials to establish if they are luminous or not. Understand that light travels in straight lines. Altering the angle of light to impact a shadow 'stretch'. How light travels through the eye and the different components. Identifying sources of light and sources of reflection How does my shadow change over the day? How does light travel? How does my shadow change over the day? Who invented the lightbulb? (Thomas Edison) What is the bouncing bomb?

	I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. I can use test results to make predictions to set up further comparative and fair tests. I can 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. I can use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. I can develop and use keys and other information to classify and describe objects in ways to help answer questions. I can justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources.			
--	---	--	--	--

	I can identify scientific evidence that has been used to support or refute ideas or arguments. I can predict outcomes and solve problems.			
--	---	--	--	--

UKS2 Cycle 1 – Summer 1

Builds on LKS2 – Living things and their habitats

- Know how to recognise that living things can be grouped in a variety of ways.
- Know how to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- Know how to recognise that environments can change and that this can sometimes pose dangers and have an impact on living things.

Types of Knowledge	Disciplinary Knowledge	Substantive Knowledge	Vocabulary	Experience
Will study...	Working scientifically – knowledge of how scientific knowledge is generated and grows.	The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.		
A SCIENTIST studying Biology – Living Things and their Habitats.  Living Organisms  Questions  Methods and Measurements  Data Analysis  Explanations	I can I can plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. I can recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. I can take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. I can make my own decisions and select the most appropriate type of scientific enquiry to use and recognise how to set up a comparative and fair test. I can record data and results of increasing complexity using scientific diagrams and	I know I know how to describe the life process of reproduction in some plants and animals. I know the changes experienced during puberty I know the gestation period of a human baby I know how to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I know the similarities and differences in the life cycles of animals and plants I know that plants can reproduce asexually. I know the similarities between mammal and human life cycles.	sexual, reproduction, mating, hatch, birth, offspring, asexual, regeneration, cutting, spores, gestation	Making detailed observations of the life cycle of a plant over time Studying tadpoles and their growth Sketching their changes and understanding how the environment can affect them. Studying the school grounds and pond to see what wildlife lives there. Researching different species and be able to classify them. Creating a simple classification system. Planning an investigation to find out how mould grows. Identifying plants using a key. Comparing plants / animals of the same type. Investigating how light can be reflected. Making a periscope.

	labels, classification keys, tables, scatter graphs, bar and line graphs. I can use test results to make predictions to set up further comparative and fair tests. I can 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. I can use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. I can develop and use keys and other information to classify and describe objects in ways to help answer questions. I can justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. I can identify scientific evidence that has been used to support or refute ideas or arguments.			Use a dichotomous classification key to identify 10 different arthropods Identify and classifying different micro-organisms Identify 18 organisms as vertebrates or invertebrates and place them in the correct sub-group (fish, birds, mammals, amphibians, reptiles, insects, arachnids, molluscs, worms). Similarities and differences between life cycles of animals and plants. What are the best living conditions for micro-organisms? (Yeast) How does mould grow over time? Who is Carl Linnaeus? (Taxonomy) What is Alexander Fleming famous for? (Penicillin)
--	--	--	--	---

	I can predict outcomes and solve problems.			
--	--	--	--	--

UKS2 Cycle 1 Summer 2

Types of Knowledge Will study...	Disciplinary Knowledge Working scientifically – knowledge of how scientific knowledge is generated and grows.	Substantive Knowledge The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.	Vocabulary	Experience
A SCIENTIST studying Biology – Evolution and Inheritance.  Living Organisms  Questions  Methods and Measurements  Data Analysis  Explanations	I can I can plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. I can recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. I can take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. I can make my own decisions and select the most appropriate type of scientific enquiry to use and recognise how to set up a comparative and fair test. I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	I know Evolution is the process of change in living things over time. That we inherit some features from our mothers and others from our fathers. We may share features of both parents. Characteristics are passed on from one generation to the next over time. How to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. The variety in living things can be artificially controlled by selective breeding. Selective breeding is a version of what happens in nature but is controlled by humans. Some beneficial adaptations in some animals and plants. Charles Darwin, the originator of the theory of evolution.	adaptation, ancestor, biodiversity, biome breeding, characteristics, environment, evolution extinct, fossil, generation, inherit natural selection, offspring, palaeontology reproduction, species, survive, theory, variation	Modelling the process of change that happens in species through evolution by playing a game. Researching an adaptation of a plant or an animal. Making up imaginary creatures that are suited to live in a particular environment make a presentation of their learning in this unit. Children to investigate skulls (including humans and their ancestors), and compare them to a chimpanzee skull. Investigate other fossils and identify similarities and differences with creatures around today. How have finches evolved via natural selection over a period of time? Who is Charles Darwin? (Theory of Evolution). Who is Mary Anning? (Palaeontology)

	I can use test results to make predictions to set up further comparative and fair tests. I can 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. I can use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. I can develop and use keys and other information to classify and describe objects in ways to help answer questions. I can justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. I can identify scientific evidence that has been used to support or refute ideas or arguments. I can predict outcomes and solve problems.	Darwin's great breakthrough was to realise that even the slightest variation amongst a species gave some a better chance of surviving than others in their environment. animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.		
--	---	---	--	--

