Larkrise Primary School Progression of Skills - Science

Knowledge Skills and Understanding	
Observing closely (EYFS)	• Can they notice, observe and describe changes in season, plants as they grow and animals as they develop through drawing?
Observing closely (Year 1)	• Can they talk about what they <see, touch, smell, hear or taste>? • Can they use simple equipment to help them make observations? **Challenge** • Can they find out by watching, listening, tasting, smelling and touching? • Can they give a simple reason for their answers?
Observing closely (Year 2)	• Can they use <see, touch, smell, hear or taste> to help them answer questions? • Can they use some scientific words to describe what they have seen and measured? • Can they compare several things? **Challenge** • Can they suggest ways of finding out through listening, hearing, smelling, touching and tasting?
Observing closely (Year 3)	
Observing closely (Year 4)	
Observing closely (Year 5)	
Observing closely (Year 6)	

Knowledge Skills and Understanding	
Performing Tests (EYFS)	• Can they perform a simple test?
Performing Tests (Year 1)	• Can they perform a simple test? • Can they tell other people about what they have done? **Challenge** • Can they give a simple reason for their answers?
Performing Tests (Year 2)	• Can they carry out a simple fair test? • Can they explain why it might not be fair to compare two things? • Can they say whether things happened as they expected? • Can they suggest how to find things out? • Can they use prompts to find things out? **Challenge** • Can they say whether things happened as they expected and if not why not?
Performing Tests (Year 3)	
Performing Tests (Year 4)	
Performing Tests (Year 5)	
Performing Tests (Year 6)	

Knowledge Skills and Understanding	
Identifying and classifying (EYFS)	• Can they think of some questions to ask? • Can they name common animals, pets and plants?
Identifying and classifying (Year 1)	• Can they think of some questions to ask? • Can they answer some scientific questions? • Can they explain what they have found out? • Can they identify and classify things they observe? **Challenge** • Can they talk about similarities and differences? • Can they explain what they have found out using scientific vocabulary?
Identifying and classifying (Year 2)	• Can they organise things into groups? • Can they identify plants by a specific criterion, e.g. evergreen, flowering etc? • Can they identify animals and plants by a specific criterion, e.g., lay eggs or not; have feathers or not? **Challenge** • Can they suggest more than one way of grouping materials and explain their reasons?
Identifying and classifying (Year 3)	
Identifying and classifying (Year 4)	
Identifying and classifying (Year 5)	
Identifying and classifying (Year 6)	

Knowledge Skills and Understanding	
Recording Findings (EYFS)	• Can they use technology to photograph and record findings?
Recording Findings (Year 1)	• Can they show their work using pictures, labels and captions? • Can they put some information in a chart or table? • Can they record their findings using standard units? **Challenge** • Can they use ICT to show their working? • Can they make accurate measurements?
Recording Findings (Year 2)	• Can they use <text, diagrams, pictures, charts, tables> to record their observations? • Can they measure using <simple equipment>? **Challenge** • Can they use information from books and online information to find things out?
Recording Findings (Year 3)	
Recording Findings (Year 4)	
Recording Findings (Year 5)	
Recording Findings (Year 6)	

Knowledge Skills and Understanding	
Plants (EYFS)	• Can they talk about some of the plants they have observed? • Can they look closely at similarities, differences, patterns and change? • Can they show care and concern for living things and the environment? • Can they make observations of plants and explain why some things occur?
Plants (Year 1)	• Can they name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant? • Can they identify and name a range of common plants and trees? • Can they recognise deciduous and evergreen trees? • Can they name the trunk, branches and root of a tree? • Can they describe the parts of a plant (roots, stem, leaves, flowers)? **Challenge** • Can they name the main parts of a flowering plant?
Plants (Year 2)	• Can they describe what plants need to survive? • Can they observe and describe how seeds and bulbs grow into mature plants? • Can they find out & describe how plants need water, light and a suitable temperature to grow and stay healthy? **Challenge** • Can they describe what plants need to survive and link it to where they are found? • Can they explain that plants grow and reproduce in different ways?
Plants (Year 3)	• Can they identify and describe the functions of different parts of flowering plants? (roots, stem/trunk, leaves and flowers)? • Can they explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow)? • Can they explain how they vary from plant to plant? • Can they investigate the way in which water is transported within plants? • Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal? **Challenge** • Can they classify a range of common plants according to many criteria (environment found, size, climate required, etc.)?

Plants (Year 4)	
Plants (Year 5)	
Plants (Year 6)	

Knowledge Skills and Understanding	
Animals, including humans (EYFS)	• Can they talk about some of the animals they have observed? • Can they show care and concern for living things and the environment? • Can they understand how humans and animals grow and change over time considering how they and their family members have changed from past to present? • Can they match animals & offspring? • Do they understand about the life cycle of a living thing, observing and noticing changes over time?
Animals, including humans (Year 1)	• Can they point out some of the differences between different animals? • Can they sort photographs of living things and non-living things? • Can they identify and name a variety of common animals? (birds, fish, amphibians, reptiles, mammals, invertebrates) • Can they describe how an animal is suited to its environment? • Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores? • Can they name the parts of the human body that they can see? • Can they draw & label basic parts of the human body? • Can they identify the main parts of the human body and link them to their senses? • Can they name the parts of an animal's body? • Can they name a range of domestic animals? • Can they classify animals by what they eat? (carnivore, herbivore, omnivore) • Can they compare the bodies of different animals? **Challenge** • Can they begin to classify animals according to a number of given criteria? • Can they point out differences between living things and non-living things? • Can they name some parts of the human body that cannot be seen? • Can they say why certain animals have certain characteristics? • Can they name a range of wild animals?
Animals, including humans (Year 2)	• Can they describe what animals need to survive? • Can they explain that animals grow and reproduce? • Can they explain why animals have offspring which grow into adults?

	• Can they describe the life cycle of some living things? (e.g. egg, chick, chicken) • Can they explain the basic needs of animals, including humans for survival? (water, food, air) • Can they describe why exercise, balanced diet and hygiene are important for humans? **Challenge** • Can they explain that animals reproduce in different ways?
Animals, including humans (Year 3)	
Animals, including humans (Year 4)	• Can they explain the importance of a nutritionally balanced diet? • Can they describe how nutrients, water and oxygen are transported within animals and humans? • Can they identify and name the basic parts of the digestive system in humans? • Can they describe the simple functions of the basic parts of the digestive system in humans? • Can they identify that animals, including humans, cannot make their own food: they get nutrition from what they eat? • Can they identify the simple function of different types of teeth in humans? • Can they compare the teeth of herbivores and carnivores? • Can they describe and explain the skeletal system of a human? • Can they describe and explain the muscular system of a human? • Can they explain how the muscular and skeletal systems work together to create movement? • Can they classify living things and non-living things by a number of characteristics that they have thought of? • Can they explain how people, weather and the environment can affect living things? **Challenge** • Can they explain how certain living things depend on one another to survive?
Animals, including humans (Year 5)	
Animals, including humans (Year 6)	• Can they identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood? • Can they recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function? • Can they describe the ways in which nutrients and water and transported within animals, including humans? • Can they describe changes as humans develop to old age?

	Challenge • Can they explore the work of medical pioneers, for example, William Harvey and Galen and recognise how much we have learnt about our bodies? • Can they compare the organ systems of humans to other animals? • Can they make a diagram of the human body and explain how different parts work and depend on one another? • Can they name the major organs in the human body? • Can they locate the major human organs? • Can they make a diagram that outlines the main parts of a body?

Knowledge Skills and Understanding	
Everyday materials (classifying and grouping) (EYFS)	• Can they explain why a material might be useful for a specific job? • Can they describe materials using their senses?
Everyday materials (classifying and grouping) (Year 1)	• Can they distinguish between an object and the material from which it is made? • Can they describe materials using their senses? • Can they describe materials using their senses, using specific scientific words? • Can they explain what material objects are made from? • Can they explain why a material might be useful for a specific job? • Can they name some different everyday materials? e.g. wood, plastic, metal, water and rock • Can they sort materials into groups by a given criteria? • Can they explain how solid shapes can be changed by squashing, bending, twisting and stretching? **Challenge** • Can they describe things that are similar and different between materials?
Classifying and grouping materials/changing materials (Year 2)	• Can they describe the simple physical properties of a variety of everyday materials? • Can they compare and group together a variety of materials based on their simple physical properties? • Can they link colours to natural and man-made objects? • Can they explore how the shapes of solid objects can be changed? (squashing, bending, twisting, stretching) • Can they find out about people who developed useful new materials? (John Dunlop, Charles Macintosh, John McAdam) • Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses? **Challenge** • Can they describe the properties of different materials using words like, transparent or opaque, flexible, etc.? • Can they sort materials into groups and say why they have sorted them in that way? • Can they say which materials are natural and which are man made? • Can they explain how materials are changed by bending, twisting and stretching? • Can they tell which materials cannot be changed back after being heated, cooled, bent, stretched or twisted?

Classifying and grouping materials/changing materials (Year 3)	
Classifying and grouping materials/changing materials (Year 4)	
Classifying and grouping materials/changing materials (Year 5)	
Classifying and grouping materials/changing materials (Year 6)	• Can they compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets? • Can they explain how some materials dissolve in liquid to form a solution? • Can they describe how to recover a substance from a solution? • Can they use their knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving, evaporating? • Can they give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals wood and plastic? • Can they describe changes using scientific words? (evaporation, condensation) • Can they demonstrate that dissolving, mixing and changes of state are reversible changes? • Can they explain that some changes result in the formation of new materials, and that this kid of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda? • Can they use the terms ‘reversible’ and ‘irreversible’?

Knowledge Skills and Understanding	
Seasonal Changes (EYFS)	• Can they make comments and asks questions about aspects of their familiar world such as the place where they live or the natural world? • Can they notice, observe and describe seasonal changes?
Seasonal Changes (Year 1)	• Can they observe changes across the four seasons? • Can they name the four seasons in order? • Can they observe and describe weather associated with the seasons? • Can they observe and describe how day length varies? **Challenge** • Can they observe features in the environment and explain that these are related to a specific season? • Can they observe and talk about changes in the weather? • Can they talk about weather variation in different parts of the world? • Can they explain what happens to certain materials when they are heated, e.g. ice or snow? • Can they explain what happens to certain liquids when they are cooled, e.g. water? • Can they make accurate measurements?
Seasonal Changes (Year 2)	
Seasonal Changes (Year 3)	Developed through some Geography units (Europe, Contrasting locality, Australia, Deserts)
Seasonal Changes (Year 4)	Developed in some Geography units (Measuring Weather, Climate Change)
Seasonal Changes (Year 5)	
Seasonal Changes (Year 6)	

Knowledge Skills and Understanding	
Living things and their habitats (EYFS)	• Can they comment and ask questions about aspects of their familiar world such as the place where they live or the natural world? • Can they talk about some of the things they have observed such as plants, animals, natural and found objects.? • Are they developing an understanding of growth, decay and changes over time? • Can they show care and concern for living things and the environment?
Living things and their habitats (Year 1)	
Living things and their habitats (Year 2)	• Can they match certain living things to the habitats they are found in? • Can they explain the differences between living and non-living things? • Can they describe some of the life processes common to plants and animals, including humans? • Can they decide whether something is living, dead or non-living? • Can they describe how a habitat provides for the basic needs of things living there? • Can they describe a range of different habitats? • Can they describe how plants and animals are suited to their habitat? **Challenge** • Can they name some characteristics of an animal that help it to live in a particular habitat? • Can they describe what animals need to survive and link this to their habitats?
Living things and their habitats (Year 3)	• Can they recognise that living things can be grouped in a variety of ways? • Can they explore and use a classification key to group, identify and name a variety of living things? (plants, vertebrates, invertebrates) • Can they compare the classification of common plants and animals to living things found in other places? (under the sea, prehistoric) • Do they recognise that environments can change and this can sometimes pose a danger to living things? **Challenge** • Can they give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment? • Can they explore the work of pioneers in classification? (e.g. Carl Linnaeus) • Can they name and group a variety of living things based on feeding patterns? (producer, consumer, predator, prey, herbivore, carnivore, omnivore)

Living things and their habitats (Year 4)	
Living things and their habitats (Year 5)	• Can they describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird? • Can they describe the life cycles of common plants? • Can they explore the work of well know naturalists and animal behaviourists? (David Attenborough and Jane Goodall) • Can they describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including microorganisms, plants and animals? • Can they give reasons for classifying plants and animals based on specific characteristics? • Can they explain what a simple food chain shows? • Can they construct and interpret a variety of food chains, identifying producers, predators and prey? **Challenge** • Can they observe their local environment and draw conclusions about life-cycles, e.g. plants in the vegetable garden or flower border? • Can they compare the life cycles of plants and animals in their local environment with the life cycles of those around the world, e.g. rainforests? • Can they create a timeline to indicate stages of growth in certain animals, such as frogs and butterflies? • Can they explain why classification is important? • Can they readily group animals into reptiles, fish, amphibians, birds and mammals? • Can they sub divide their original groupings and explain their divisions? • Can they group animals into vertebrates and invertebrates? • Can they find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification? •
Living things and their habitats (Year 6)	

Knowledge Skills and Understanding	
Planning (EYFS)	
Planning (Year 1)	
Planning (Year 2)	
Planning (Year 3)	• Can they use different ideas and suggest how to find something out? • Can they make and record a prediction before testing? • Can they plan a fair test and explain why it was fair? • Can they plan a fair test and isolate variables, explaining why it was fair and which variables have been isolated? • Can they suggest improvements and predictions? • Can they set up a simple fair test to make comparisons? • Can they explain why they need to collect information to answer a question? • Can they decide which information needs to be collected and decide which is the best way for collecting it? • Can they use their findings to draw a simple conclusion? **Challenge** • Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? • Can they plan and carry out an investigation by controlling variables fairly and accurately? • Can they use test results to make further predictions and set up further comparative tests?
Planning (Year 4)	• Can they set up a simple fair test to make comparisons? • Can they plan a fair test and isolate variables, explaining why it was fair and which variables have been isolated? • Can they use different ideas and suggest how to find something out? • Can they make and record a prediction before testing? • Can they plan a fair test and explain why it was fair? • Can they explain why they need to collect information to answer a question? • Can they suggest improvements and predictions? • Can they decide which information needs to be collected and decide which is the best way for collecting it?

	• Can they use their findings to draw a simple conclusion? **Challenge** • Can they plan and carry out an investigation by controlling variables fairly and accurately? • Can they use test results to make further predictions and set up further comparative tests? • Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?
Planning (Year 5)	• Can they plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary? • Can they make a prediction with reasons? • Can they use test results to make predictions to set up comparative and fair tests? • Can they present a report of their findings through writing, display and presentation? **Challenge** • Can they explore different ways to test an idea, choose the best way and give reasons? • Can they plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary? • Can they use test results to make predictions to set up comparative and fair tests? • Can they vary one factor whilst keeping the others the same in an experiment? • Can they present a report of their findings through writing, display and presentation? • Can they use information to help make a prediction? • Can they explain, in simple terms, a scientific idea and what evidence supports it?
Planning (Year 6)	• Can they explore different ways to test an idea, choose the best way, and give reasons? • Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? • Can they plan and carry out an investigation by controlling variables fairly and accurately? • Can they make a prediction with reasons? • Can they use information to help make a prediction? • Can they explain, in simple terms, a scientific idea and what evidence supports it? • Can they use test results to make further predictions and set up further comparative tests? • Can they present a report of their findings through writing, display and presentation? **Challenge** • Can they choose the best way to answer a question? • Can they use information from different sources to answer a question and plan an investigation? • Can they make a prediction which links with other scientific knowledge? • Can they identify the key factors when planning a fair test?

	• Can they explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough?

Knowledge Skills and Understanding	
Obtaining and presenting evidence (EYFS)	
Obtaining and presenting evidence (Year 1)	
Obtaining and presenting evidence (Year 2)	
Obtaining and presenting evidence (Year 3)	• Can they record their observations in different ways? <labelled diagrams, charts etc> • Can they measure using different equipment and units of measure? • Can they describe what they have found using scientific language? • Can they explain their findings in different ways (display, presentation, writing)? • Can they make accurate measurements using standard units? **Challenge** • Can they use their findings to draw a simple conclusion? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? • Can they suggest improvements and predictions for further tests?
Obtaining and presenting evidence (Year 4)	• Can they take measurements using different equipment and units of measure and record what they have found in a range of ways? • Can they make accurate measurements using standard units? • Can they explain their findings in different ways (display, presentation, writing)? **Challenge** • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? • Can they take measurements using different equipment and units of measure and record what they have found in a range of ways? • Can they use their findings to draw a simple conclusion?
Obtaining and presenting evidence (Year 5)	• Can they take measurements using a range of scientific equipment with increasing accuracy and precision? • Can they take repeat readings when appropriate? • Can they record more complex data and results using scientific diagrams, labels, classification keys, tables, scatter graphs, bar and line graphs? • **Challenge**

	• Can they decide which units of measurement they need to use? • Can they explain why a measurement needs to be repeated?
Obtaining and presenting evidence (Year 6)	• Can they explain why they have chosen specific equipment? (incl ICT based equipment) • Can they decide which units of measurement they need to use? • Can they explain why a measurement needs to be repeated? • Can they record their measurements in different ways? (incl bar charts, tables and line graphs) • Can they take measurements using a range of scientific equipment with increasing accuracy and precision? **Challenge** • Can they plan in advance which equipment they will need and use it well? • Can they collect information in different ways? • Can they make precise measurements? • Can they record their measurements and observations systematically?

Knowledge Skills and Understanding	
Considering evidence and evaluating (EYFS)	
Considering evidence and evaluating (Year 1)	
Considering evidence and evaluating (Year 2)	
Considering evidence and evaluating (Year 3)	• Can they explain what they have found out and use their measurements to say whether it helps to answer their question? • Can they use a range of equipment (including a data-logger) in a simple test? • Can they find any patterns in their evidence or measurements? • Can they make a prediction based on something they have found out? • Can they evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? • Can they use straightforward scientific evidence to answer questions or to support their findings? • Can they identify differences, similarities or changes related to simple scientific ideas or processes? **Challenge** • Can they report findings from investigations through written explanations and conclusions? • Can they use a graph or diagram to answer scientific questions? • Can they suggest how to improve their work if they did it again?
Considering evidence and evaluating (Year 4)	• Can they find any patterns in their evidence or measurements? • Can they make a prediction based on something they have found out? • Can they evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? • Can they use straightforward scientific evidence to answer questions or to support their findings? • Can they identify differences, similarities or changes related to simple scientific ideas or processes? • Can they explain what they have found out and use their measurements to say whether it helps to answer their question? • Can they use a range of equipment (including a data-logger) in a simple test? **Challenge**

	• Can they report findings from investigations through written explanations and conclusions? • Can they use a graph or diagram to answer scientific questions?
Considering evidence and evaluating (Year 5)	• Can they report and present findings from enquiries through written explanations and conclusions? • Can they use a graph to answer scientific questions? **Challenge** • Can they find a pattern from their data and explain what it shows? • Can they link what they have found out to other science? • Can they suggest how to improve their work and say why they think this?
Considering evidence and evaluating (Year 6)	• Can they find a pattern from their data and explain what it shows? • Can they suggest how to improve their work and say why they think this? • Can they report findings from investigations through written explanations and conclusions? • Can they 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? • Can they use a graph to answer scientific questions? • Can they link what they have found out to other science? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? **Challenge** • Can they explain how they could improve their way of working? Can they draw conclusions from their work? • Can they link their conclusions to other scientific knowledge?

Knowledge Skills and Understanding	
Rocks (EYFS)	
Rocks (Year 1)	
Rocks (Year 2)	
Rocks (Year 3)	• Can they compare and group together different rocks on the basis of their appearance and simple physical properties? • Can they describe and explain how different rocks can be useful to us? • Can they describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed? • Can they describe in simple terms how fossils are formed when things that have lived are trapped within rock? • Can they recognise that soils are made from rocks and organic matter? **Challenge** • Can they classify igneous and sedimentary rocks? • Can they begin to relate the properties of rocks with their uses?
Rocks (Year 4)	
Rocks (Year 5)	
Rocks (Year 6)	

Knowledge Skills and Understanding	
Forces and Magnets (EYFS)	
Forces and Magnets (Year 1)	
Forces and Magnets (Year 2)	
Forces and Magnets (Year 3)	• Can they compare how things move on different surfaces? • Can they observe that magnetic forces can be transmitted without direct contact? • Can they observe how some magnets attract or repel each other? • Can they classify which materials are attracted to magnets and which are not? • Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance? • Can they compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet? • Can they identify some magnetic materials? • Can they describe magnets have having two poles (N & S)? • Can they predict whether two magnets will attract or repel each other depending on which poles are facing? **Challenge** • Can they investigate the strengths of different magnets and find fair ways to compare them?
Forces and Magnets (Year 4)	
Forces and Magnets (Year 5)	• Can they identify the effects of air resistance, water resistance and friction that act between moving surfaces? • Can they recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect? **Challenge** • Can they describe and explain how motion is affected by forces? (including gravitational attractions, magnetic attraction and friction) • Can they work out how water can cause resistance to floating objects? • Can they explore how scientists, such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation?
Forces and Magnets (Year 6)	• Can they explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object?

	• Can they identify the effects of air resistance that act between moving surfaces? • Can they design very effective parachutes?

Knowledge Skills and Understanding	
Light (EYFS)	
Light (Year 1)	
Light (Year 2)	
Light (Year 3)	• Can they recognise that they need light in order to see things? • Can they recognise that dark is the absence of light? • Can they notice that light is reflected from surfaces? • Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes? • Can they recognise that shadows are formed when the light from a light source is blocked by a solid object? • Can they find patterns in the way that the size of shadows change? • Can they find simple patterns (or associations) e.g. the nearer the light source the larger the shadow. **Challenge** • Can they explain why lights need to be bright or dimmer according to need? • Can they explain the difference between transparent, translucent and opaque?
Light (Year 4)	
Light (Year 5)	
Light (Year 6)	• Can they recognise that light appears to travel in straight lines? • Can they 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? • Can they explain why their shadow changes when the light source is moved closer or further from the object? • Can they explain that we see things because light travels from light sources to our eyes or from light sources to object s and then to our eyes? • Can they use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them? **Challenge**

	• Can they explain how different colours of light can be created? • Can they use and explain how simple optical instruments work? (periscope, telescope, binoculars, mirror, magnifying glass, Newton's first reflecting telescope) • Can they explore a range of phenomena, including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters.

Knowledge Skills and Understanding	
States of Matter (EYFS)	Can they understand some important processes and changes in the natural world around them, including changing states of matter e.g., puddles on the playground, melting snow etc.
States of Matter (Year 1)	
States of Matter (Year 2)	
States of Matter (Year 3)	
States of Matter (Year 4)	• Can they compare and group materials together, according to whether they are solids, liquids or gases? • Can they explain what happens to materials when they are heated or cooled? • Can they measure or research the temperature at which different materials change state in degrees Celsius? • Can they use measurements to explain changes to the state of water? • Can they identify the part that evaporation and condensation has in the water cycle? • Can they associate the rate of evaporation with temperature? **Challenge** • Can they group and classify a variety of materials according to the impact of temperature on them? • Can they explain what happens over time to materials such as puddles on the playground or washing hanging on a line? • Can they relate temperature to change of state of materials?
States of Matter (Year 5)	
States of Matter (Year 6)	

Knowledge Skills and Understanding	
Sound (EYFS)	
Sound (Year 1)	
Sound (Year 2)	
Sound (Year 3)	
Sound (Year 4)	• Can they describe a range of sounds and explain how they are made? • Can they associate some sounds with something vibrating? • Can they compare sources of sound and explain how the sounds differ? • Can they explain how to change a sound (louder/softer)? • Can they recognise how vibrations from sound travel through a medium to a ear? • Can they find patterns between the pitch of a sound and features of the object that produce it? • Can they find patterns between the volume of the sound and the strength of the vibrations that produced it? • Can they recognise that sounds get fainter as the distance from the sound source increases? • Can they explain how you could change the pitch of a sound? • Can they investigate how different materials can affect the pitch and volume of sounds? **Challenge** • Can they explain why sound gets fainter or louder according to the distance? • Can they explain how pitch and volume can be changed in a variety of ways? • Can they work out which materials give the best insulation for sound?
Sound (Year 5)	
Sound (Year 6)	

Knowledge Skills and Understanding	
Electricity (EYFS)	
Electricity (Year 1)	
Electricity (Year 2)	
Electricity (Year 3)	
Electricity (Year 4)	• Can they identify common appliances that run on electricity? • Can they construct a simple series electric circuit? • Can they identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers? • Can they identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery? • Can they recognise that a switch opens and closes a circuit? • Can they associate a switch opening with whether or not a lamp lights in a simple series circuit? • Can they say what happens to the electricity when more batteries are added? • Can they recognise some common conductors and insulators? • Can they associate metals with being good conductors? **Challenge** • Can they explain how a bulb might get lighter? • Can they recognise if all metals are conductors of electricity? • Can they work out which metals can be used to connect across a gap in a circuit? • Can they explain why cautions are necessary for working safely with electricity?
Electricity (Year 5)	• Can they identify and name the basic parts of a simple electric series circuit? (cells, wires, bulbs, switches, buzzers) • Can they compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches? • Can they use recognised symbols when representing a simple circuit in a diagram? **Challenge**

	• Can they make their own traffic light system or something similar? • Can they explain the danger of short circuits? • Can they explain what a fuse is? • Can they explain how to make changes in a circuit? • Can they explain the impact of changes in a circuit? • Can they explain the effect of changing the voltage of a battery?
Electricity (Year 6)	

Knowledge Skills and Understanding	
Earth and Space (EYFS)	
Earth and Space (Year 1)	
Earth and Space (Year 2)	
Earth and Space (Year 3)	
Earth and Space (Year 4)	• Can they describe and explain the movement of the Moon relative to the Earth? • Can they describe the Sun, Earth and Moon as approximately spherical bodies? • Can they use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky? **Challenge** • Can they create shadow clocks?
Earth and Space (Year 5)	• Can they identify and explain the movement of the Earth and other plants relative to the sun in the solar system? • Can they explain how seasons and the associated weather is created? **Challenge** • Can they compare the time of day at different places on the earth? • Can they begin to understand how older civilizations used the sun to create astronomical clocks, e.g. Stonehenge? • Can they explore the work of some scientists? (Ptolemy, Alhazen, Copernicus)
Earth and Space (Year 6)	

Knowledge Skills and Understanding	
Evolution and Inheritance (EYFS)	
Evolution and Inheritance (Year 1)	
Evolution and Inheritance (Year 2)	
Evolution and Inheritance (Year 3)	
Evolution and Inheritance (Year 4)	
Evolution and Inheritance (Year 5)	• Can they talk about the work of Mary Anning? • Can they recognise that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago? • Can they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents? • Can they give reasons why offspring are not identical to each other or to their parents? • Can they explain the process of evolution and describe the evidence for this? • Can they identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution? **Challenge** • Can they talk about the work of Charles Darwin and Alfred Wallace? • Can they explain how some living things adapt to survive in extreme conditions? • Can they analyse the advantages and disadvantages of specific adaptations, such as being on two rather than four feet? • Can they begin to understand what is meant by DNA?

Evolution and Inheritance (Year 6)	