BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

SCIENCE END POINTS

Working scientifically

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
Use suitable vocabulary to talk or write about what they have done and its purpose. Ask and answer scientific questions and begin to use different types of enquiries to answer them. With guidance, set up simple practical enquiries and fair tests, making predictions for what might happen. With guidance, make careful observations and take measurements using standard units, with simple equipment. Observe, classify and compare to identify similarities, differences and changes, making connections to simple scientific ideas and processes. Gather, record, classify and present data in a variety of ways (tables, diagrams, charts and graphs) to help in answering questions. Record findings using scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	Use scientific vocabulary to report and answer questions about their findings based on evidence collected. Ask relevant questions then suggest different types of enquiries to use to answer them. Begin to independently set up simple practical enquiries, comparative and fair tests, following a method, making predictions for what might happen. With help, identify which observations to make and for how long, taking accurate measurements using standard units, with a range of equipment. Make careful observations and comparisons, identifying differences, similarities or changes and connections to scientific ideas and processes. Begin to choose how best to gather, record, classify and present observations, data and measurements in a variety of ways, to help in answering questions.	Use relevant scientific vocabulary to report on their findings and ask and answer questions based on evidence collected. Plan and set up scientific enquiries to answer questions, with help to recognise and control variables where necessary to ensure fair tests, making predictions based on prior knowledge. Begin to independently decide which observations to make, when and for how long, using a range of scientific equipment to take measurements with increasing accuracy, and repeat readings when appropriate. Make careful observations, using them to make comparisons, identify changes, and begin to making links between cause and effect and scientific ideas and processes. Record data and results using a range of methods, e.g. scientific diagrams, classification keys, tables, scatter graphs, bar and line graphs. Report and present findings from enquiries, including conclusions, that	Use precise scientific vocabulary to report on their findings and ask and answer questions based on evidence collected. Plan and set up different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary to ensure fair tests, making predictions based on prior knowledge. Independently decide which observations to make, when and for how long, using a range of scientific equipment to take measurements with accuracy and precision, and repeat readings when appropriate. Make systematic observations, using them to make comparisons, identify changes, making links between cause and effect and scientific ideas and processes. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

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SCIENCE END POINTS

With guidance, begin to report on findings from enquiries, in a range of ways (e.g. oral and written explanations, displays and presentations). With guidance, find scientific evidence to answer questions or to support their findings. With guidance, use results to draw simple conclusions, make predictions, suggest improvements and raise further questions.	Record findings, choosing relevant scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries in a range of ways, including oral and written explanations, displays or presentations of results. Use straightforward scientific evidence to answer questions or to support findings. Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions.	begin to show causal relationships, in a range of oral and written forms, displays and other presentations, using relevant scientific language. Begin to identify scientific evidence that has been used to support or refute ideas. Justify conclusions based on evidence collected. Use results to identify improvements, further questions and predictions, and begin to suggest further comparative and fair tests.	Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions, that show causal relationships and the degree of trust in the results, in a range of oral and written forms, displays and other presentations, using precise scientific language. Identify scientific evidence that has been used to support or refute ideas or arguments. Report on and validate their findings, answer questions and justify their methods, opinions and conclusions. Use their results to suggest improvements to their methods, separating facts from opinions, and pose further questions, making predictions for what they might observe.

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SCIENCE END POINTS

Plants

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
Describing the functions of different parts of flowering plants; the root, stem and trunk, leaves (photosynthesis) flowers. Exploring the requirements of plants for life and growth and how they vary from plant to plant. Investigate how water is transported in plants. Explore the parts of the flower in relation to the life cycle of flowering plants (pollination, seed formation, seed dispersal).	Identifying and classifying flowering and non-flowering plants.	Different types of reproduction including sexual and asexual reproduction in plants. Life cycle changes in plants. Group and sort plants by how they reproduce. Label and describe the parts of a flower involved in sexual reproduction in plants (stamen, filament, anther, pollen, carpel, stigma, style, ovary, ovule and sepal).	Classifying plants based on specific characteristics. Introduced to micro-organisms. How plants are adapted to suit their environment and links to evolution.

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SCIENCE END POINTS

Animals, including humans

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
Identify that animals including humans need the right type and amount of nutrition and that they cannot make their own food; they get nutrition from what they eat. Compare and contrast the diets of different animals. Identify that humans and other animals have skeletons and muscles for support, protection and movement. Identify and group animals that have no skeleton, and internal skeleton (endoskeleton) and an external skeleton (exoskeleton). Explain the importance and characteristics of a healthy, balanced diet.	Describe the simple functions of the basic parts of the digestive system in humans. Identify the four different types of teeth in humans and other animals and their simple functions. Describe what damages teeth and how to look after them. Construct and interpret a variety of food chains, identifying producers, predators and prey. Interpret food chains and webs to show interdependence and how energy is passed on over time.	Describe the changes as humans develop to old age. Describe the process of human reproduction. Explain why personal hygiene is important during puberty. Describe, using their knowledge of food chains and webs, what could happen if a habitat had a living thing removed or introduced.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Explain the impact of positive and negative lifestyle choices on the body. Explain that the circulatory system in animals transports oxygen, nutrients and water around the body.

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SCIENCE END POINTS

Evolution and inheritance

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
			Recognise that living things have changed over time, using specific examples and evidence. Explain that fossils provide information about living things that inhabited the Earth millions of years ago. Describe some significant changes that have happened on Earth and the evidence, such as fossils, that support this. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Describe how animals and plants can be bred to produce offspring with specific and desired characteristics (selective breeding). Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

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SCIENCE END POINTS

Living things and their habitats

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
Describe how environments can change due to natural influences and how living things need to be able to adapt to these changes.	Recognise that living things can be grouped in a variety of ways. Compare, sort and group living things from a range of environments, in a variety of ways, based on observable features and behaviour. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change due to human and natural influences and that this can impact on and sometimes pose dangers to living things. Explain how unfamiliar habitats, such as a mountain or ocean, can change over time and what influences these changes.	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. Research and describe different farming practices in the UK and how these can have positive or negative effects on natural habitats.	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. Give reasons for classifying plants and animals based on specific characteristics. Use and construct classification systems to identify plants and animals from a range of habitats. Research unfamiliar animals and plants from a range of habitats, deciding upon and explaining where they belong in the classification system.

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SCIENCE END POINTS

Forces

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
Compare how objects move over surfaces of different materials. Explain that an object will not move unless a push or pull force is applied. Describe forces in action and that some forces need direct contact between two objects, but some can act at a distance (magnetic forces). Observe how magnets attract or repel each other and attract some materials and not others. 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. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.		Explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Describe and demonstrate how simple levers, gears and pulleys assist the movement of objects.	

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SCIENCE END POINTS

Light

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change during the day.			Recognise that light appears to travel in straight lines. 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. 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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Explain, using words, diagrams or a model, why shadows have the same shape as the objects that cast them and how shadows can be changed. Describe, using scientific language, phenomena associated with refraction of light. Describe using diagrams how light behaves when reflected off a mirror or when passing through a lens (plain, convex or concave).

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SCIENCE END POINTS

Electricity

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
	Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. 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. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors. Explain the precautions needed for working safely with electrical circuits.		Create circuits using a range of components and record diagrammatically. Use recognised symbols for electrical components when representing a simple circuit in a diagram. Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. 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.

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SCIENCE END POINTS

Sound

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
	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 pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases. Compare how the volume of a sound changes at different distance from the source. Compare and find patterns in the volume and pitch of a sound using a range of equipment such as musical instruments.		

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SCIENCE END POINTS

Earth and space

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
		Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the moon relative to the Earth. Describe the Sun, Earth and moon as approximately spherical bodies. Use this knowledge to understand the phases of the moon and eclipses. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	

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SCIENCE END POINTS

Properties and changes of materials

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
Group and sort materials as being reflective or non-reflective. Compare and group materials based on their magnetic properties.	**States of matter** Compare and group materials together, according to whether they are solids, liquids or gases. 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). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**Properties and changes of materials** 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. Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain 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. Identify, demonstrate and compare reversible and irreversible changes. Explain the precautions needed for working safely when heating, burning, cooling and mixing chemicals.	