BISHOP CREIGHTON ACADEMY – SCIENCE LONG TERM PLAN – YEAR 6

Year 6	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Programme of study *(Statutory requirements)*	**Electricity** • 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 • use recognised symbols when representing a simple circuit in a diagram	**Animals including humans** • 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 • describe the ways in which nutrients and water are transported within animals, including humans. • describe the changes as humans develop to old age (SRE) Living things and their habitats	**Evolution and Inheritance** • recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution		**Light** • 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.	**Classification** • 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.
Working scientifically *(Statutory requirements)* **PURPLE = must be taught linked to subject knowledge**	•select the most appropriate ways to answer science questions using different types of scientific enquiry, including carrying out comparative and fair tests and finding things out using a wide range of secondary sources. •planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary •taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate •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 •reporting and presenting findings from enquiries, including conclusions, causal relationships	•select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. •planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary •taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate •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	• select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. •planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary •taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate •recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables • identifying scientific evidence that has been used to support or refute ideas or arguments. •use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.		• select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. •planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary •taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate •recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	•select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. •planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary •taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels,

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	and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations	•reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree o trust in results, in oral and written forms such as displays and other presentations •identifying scientific evidence that has been used to support or refute ideas or arguments •use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.		•using test results to make predictions to set up further comparative and fair tests •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 •identifying scientific evidence that has been used to support or refute ideas or arguments. •use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.	classification keys, tables, scatter graphs, bar and line graphs •using test results to make predictions to set up further comparative and fair tests •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 •identifying scientific evidence that has been used to support or refute ideas or arguments. •use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.
Possible enquiry or starting points (non statutory guidance)	•construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors •learn how to represent a simple circuit in a diagram using recognised symbols. systematically identifying the effect of changing one component at a time in a circuit •designing and making a set of traffic lights, a burglar alarm or some other useful circuit **Note:** pupils are expected to learn only about series circuits, not parallel circuits. Pupils should be taught to take the necessary	•explore and answer questions that help them to understand how the circulatory system enables the body to function. •learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body. •explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health	•pupils build on what they learned about fossils in the topic on rocks in year 3, pupils should find out more about how living things on earth have changed over time •be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, Labradors are crossed with poodles. •appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox. •find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution. **Work scientifically by:** •observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. •they might analyse the advantages and disadvantages of specific adaptations, such as being on 2 feet rather than 4, having a long or a	•build on the work on light in year 3, exploring the way that light behaves, including light sources, reflection, and shadows. •talk about what happens and make predictions. **Work scientifically by:** •deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. •investigate the relationship between light sources, objects and shadows by using shadow puppets. •they could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in	•look at the classification system in more detail. •introduce the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. •through direct observations where possible, they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). •discuss reasons why living things are placed in one group and not another. Pupils might find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification **Work scientifically by:** •using classification systems and keys to identify some animals and

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	precautions for working safely with electricity.		short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers. **Note:** at this stage, pupils are not expected to understand how genes and chromosomes work.	water, and coloured filters (they do not need to explain why these phenomena occur).	plants in the immediate environment. •they could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.