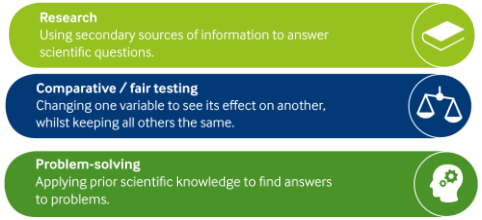
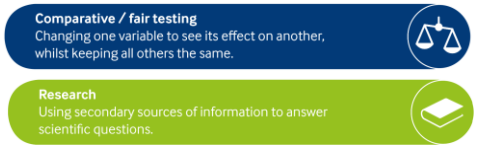
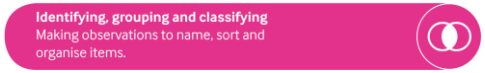
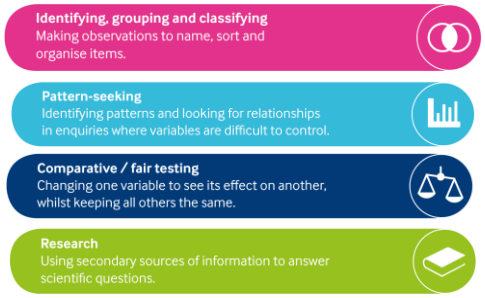
Year 6 Science Coverage

Living things and their habitats	Animals including humans	Evolution and inheritance	Electricity	Light
LH1 - I can 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.	A1 - I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.	EV1 - I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.	E1 - I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.	L1 - I can 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.
LH2 - I can give reasons for classifying plants and animals based on specific characteristics.	A2 - I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.	EV2 - I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	E2-I can 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.	L2 - I can 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.
	A3 - I can describe the ways in which nutrients and water are transported within animals, including humans	EV3 - I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	E3- I can use recognised symbols when representing a simple circuit in a diagram.	L3- I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Scientist to study: Carl Linnaeus who is most famous for creating a system of naming plants and animals.	**Scientist to study:** William Harvey (Doctor who discovered the nature of blood circulation and the function of the heart as a pump) Richard Doll (Doctor who proved the link between lung cancer and smoking)	**Scientist to study:** Charles Darwin - (Natural Historian who developed the theory of evolution by natural selection) Emma Dunne (Palaeobiologist who investigates how ancient climate change affected the evolution of different species)	**Scientist to study:** Maria Telkes, Michael Faraday, Charles F Brush, Olga GonzalezSanabria, Esther Sans Takeuchi	**Scientist to study:** Ibn al-Haytham (Alhazen) (Physicist & Mathematician who developed a theory that light travels in a straight line, and proved it by carrying out the first scientific experiment) Ibn Sahl - (Mathematician who observed the paths of rays of light as they reflected off different mirrors)
Working Scientifically skills Making observations and asking questions. Recording data.	Working Scientifically skills Making observations and communicating information. Communicating information Setting up a test to answer questions, observing and taking measurements. Observing, measuring and recording data. Asking questions	Working Scientifically skills Making observations and asking questions. Setting up a simple test and communicating results.	Working Scientifically skills Researching and asking questions. Making predictions and observing. Setting up tests and communicating results.	Working Scientifically skills Making observations and recording information. Making observations and communicating results. Setting up a simple test and communicating results. Evaluating.

	Unit	Key End Points	Vocabulary	Prior learning	Common misconceptions
Autumn 1	Electricity E1-3 	**By the end of this unit children will be able to:** Explain that electrons have a negative charge and protons have a positive charge. Explain where electricity comes from and different ways in which electricity can be generated. Identify and name the basic parts of a simple electric circuit (cells, wires, bulbs, switches, batteries) Explain the difference between a series and a parallel circuit. Draw and construct working circuits. Recognise symbols for various common circuit components. Describe the function of electrical components and match them to their symbols. Explain the effect of changing the number and voltage of cells in an electrical circuit . Explain how the brightness of a bulb can be altered by changing the wires and or circuit. Explain why an electrical appliance might blow if the voltage is too high	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage N.B. Children do not need to understand what voltage is, but will use volts and voltage to describe different batteries. The words "cells" and "batteries" are now used interchangeably	Identify common appliances that run on electricity. (Y4 - Electricity) Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Y4 - Electricity) 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. (Y4 - Electricity) Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. (Y4 - Electricity) Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)	Some children may think: • larger-sized batteries make bulbs brighter • a complete circuit uses up electricity • components in a circuit that are closer to the battery get more electricity.
Autumn 2	Light L1-3 	**By the end of this unit children will be able to:** Explain how the shape and size of a shadow are determined. Explain how moving an object changes the size of its shadow. Explain how we see light sources and non-light sources. Explain how a periscope works. Explain that light travels in a straight line. Label the main parts of a human eye and explain their functions. Explain my knowledge of reflection to place mirrors to make light follow a path. Explain how white light is made up of a spectrum of different colours.	As for Year 3 - Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous Plus: straight lines, light rays	Recognise that they need light in order to see things and that dark is the absence of light. (Y3 - Light) Notice that light is reflected from surfaces. (Y3 - Light) Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light) Recognise that shadows are formed when the light from a light source is blocked by an opaque object. (Y3 - Light) Find patterns in the way that the size of shadows change. (Y3 - Light) Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and	Some children may think: -we see objects because light travels from our eyes to the object.

				thermal), and response to magnets. (Y5 - Properties and changes of materials)	
Spring	Animals inc humans A1-3 	**By the end of this unit children will be able to:** Children will learn and recall the parts of the circulatory system and explore the heart and blood in more detail. They will use books, iPad and technology to explore these in detail and explain the role of each part. 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.	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans) Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. (Y3 - Animals, including humans) Describe the simple functions of the basic parts of the digestive system in humans. (Y4 - Animals, including humans) Identify the different types of teeth in humans and their simple functions. (Y4 - Animals, including humans)	Some children may think: • your heart is on the left side of your chest • the heart makes blood • the blood travels in one loop from the heart to the lungs and around the body • when we exercise, our heart beats faster to work the muscles more • some blood in our bodies is blue and some blood is red • we just eat food for energy • all fat is bad for you • all dairy is good for you • protein is good for you, so you can eat as much as you want • foods only contain fat if you can see it • all drugs are bad for you.
Summer 1	Living things and their habitats LH1-2 	**By the end of this unit children will be able to:** Describe the characteristics of amphibians, reptiles, birds, fish and mammals (recap Y4) Compare the characteristics of animals in different groups Talk about the two main groups of plants (flowering and non-flowering) and give examples of each Create classification keys for plants and animals and micro-organisms (partial recap Y4) Explain what micro-organisms are and how they help or hinder us. Say what the 5 kingdoms of living things are. Talk about the work of Carl Linnaeus and why his work was influential. Use classification materials to identify unknown plants, animals and microbes. Classify living things.	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, microorganism, classification	Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)	Some children may think: • all micro-organisms are harmful • mushrooms are plants.

Summer 2	Evolution and inheritance EV1-3  	**By the end of this unit children will be able to**: Explain the process of evolution by natural selection. Explain how Darwin developed the theory of natural selection. Explain and identify features that individuals have inherited from their parents. Explain how some animals are adapted to their environment. To explain how adaptation is important to the survival of species. To explain some of the strategies animals adopt to survive winter and adaptations exhibited by animals in polar regions. Explain how some plants are adapted to their environments Explain what fossils are and how they were formed. Explain the job of a palaeontologist.	Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils	Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. (Y2 - Living things and their habitats) Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)	Some children may think: • adaptation occurs during an animal's lifetime: giraffes' necks stretch during their lifetime to reach higher leaves and animals living in cold environments grow thick fur during their life • offspring most resemble their parents of the same sex, so that sons look like fathers • all characteristics, including those that are due to actions during the parent's life such as dyed hair or footballing skills, can be inherited • cavemen and dinosaurs were alive at the same time.