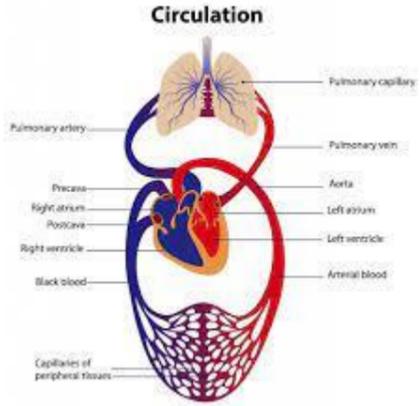


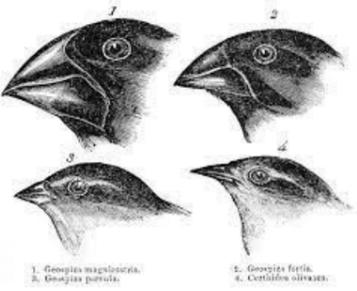
**Science Unit of Work
Year 6**

Unit	Prior learning (Retrieval)	Future learning	Common Misconceptions
<p>Animals including humans</p> 	<ul style="list-style-type: none"> • Know the key stages of foetal development in humans. • Know the stages in growth and development of humans (baby, toddler, childhood, adolescence, adulthood, and old age) • Know the changes in each stage of development in humans. 	<ul style="list-style-type: none"> • the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms. • content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed. • calculations of energy requirements in a healthy daily diet. • the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. • the effects of recreational drugs (including substance misuse) on behaviour, health and life processes. 	<ul style="list-style-type: none"> • Blood travels in one continuous loop around the body • Blood circulation only involves the heart. • Gas exchange happens at the heart not the lungs. • That deoxygenated blood is blue.
<p>National Curriculum Subject Content:</p>	<ul style="list-style-type: none"> • Identify and name the main parts of the human circulatory system (heart, lungs, blood vessels) 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. 		
Knowledge:		Key Vocabulary	
<p>Intended Knowledge Substantive</p>	<ol style="list-style-type: none"> 1) Know the name of the main parts of the human circulatory system (heart, lungs, blood vessels). 2) Know the function of the heart. 3) Know the function of blood vessels and blood. 4) Know the impact of lifestyle on the way their bodies function. (diet, exercise, drugs) 5) Know how nutrients and water are transported within animals, including humans. 		<p>blood vessels, carbon dioxide, circulatory system, circulation, nutrients, oxygen, blood cell, artery, vein</p>
Working Scientifically:	Enquiry	Working Scientifically Objectives	Working Scientifically Vocabulary
<p>Disciplinary Knowledge:</p>	<p>Pattern Seeking -</p> <p>Comparative Testing – Compare heart rate when exercising to when resting.</p>	<p>Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Draw conclusions, explain and evaluate their methods and findings, communicating these in a variety of ways. Raise further questions that could be investigated, based on their data and observations.</p>	<p>Variable, predict, conclusion, findings, relationships</p>
<p>Assessment Outcomes</p>	<p align="center">Substantive</p> <ul style="list-style-type: none"> • I know the main parts of the human circulatory system and describe their functions. • I know the impact of diet, exercise, drugs and lifestyle on our bodies. • I know the ways in which nutrients and water are transported within animals, including humans. 		<p align="center">Disciplinary</p> <p>I can record data and results in tables, bar charts and line graphs.</p> <p align="center">I can draw conclusions.</p> <p>I can raise further questions that could be investigated, based on my data and observations.</p>
<p>Significant people/places</p>	<p>William Harvey (Discovery of the circulation of blood)</p>		

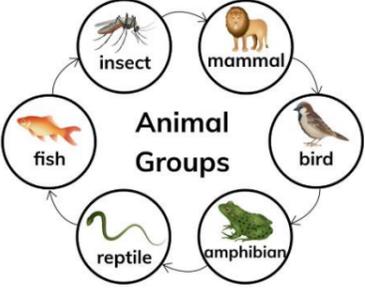
**Science Unit of Work
Year 6**

Unit	Prior learning (Retrieval)	Future learning	Common Misconceptions
Electricity 	Know common appliances that run off electricity. Know parts of a circuit using symbols (cells, wires, bulbs, switches and buzzers). Know how to construct a simple series circuit. Know whether a lamp will light in a simple series circuit. Know the purpose of a switch. Know some common conductors and insulators.	<ul style="list-style-type: none"> Construct series and parallel circuits. Measure current and potential difference within a circuit. 	<ul style="list-style-type: none"> That a battery and a cell are the same thing. Current is 'used up' as it flows round the circuit. Electricity comes out of both sides of a cell and leads to both sides of a component. Current, voltage and electricity are all the same thing.
National Curriculum Subject Content:	<ul style="list-style-type: none"> 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 		
Knowledge:			Key Vocabulary
Intended Knowledge Substantive	6) Know the symbols for wire, bulb, cell, battery, motor, switch and buzzer in a simple circuit diagram. 7) Know that the brightness of a lamp/volume of a buzzer is associated with the number and voltage of cells used. 8) Know why a bulb may be brighter or dimmer. 9) Know why a buzzer may be louder or quieter. 10) Know how components function differently when switches are on or off.		battery, cell, circuit, complete circuit, components, conductor, positive/negative, short circuit, electrons, current, voltage
Working Scientifically:	Enquiry	Working Scientifically Objectives	Working Scientifically Vocabulary
Disciplinary Knowledge:	Pattern Seeking - Comparative Testing - Plan a comparative test about the variations in how components function dependent on number and voltage of cells.	Plan different types of scientific enquiry to answer questions including recognising and controlling variable where necessary. Identify differences, similarities or changes related to simple scientific ideas and processes. Report and present findings, including conclusions, casual relationships and explanations of results.	Variable, predict, conclusion, findings, relationships
Assessment Outcomes	<p align="center">Substantive</p> <ul style="list-style-type: none"> I know the recognised symbols when representing a simple circuit in a diagram. I know the number and voltage of the cells used can affect how components function. I know reasons for variations in how components function, including the brightness of bulbs, loudness of buzzers and the on/off positions of switches 		<p align="center">Disciplinary</p> I can plan a comparative test. I can control variables. I can identify differences, similarities or changes. I can explain results and report conclusions.
Significant people/places	Nikola Tesla - invented the Tesla coil, which was widely used for many years in radios, television sets, and other electronic equipment and discovered a type of current, or flow of electricity which could change direction – alternating current (AC).		

**Science Unit of Work
Year 6**

Unit	Prior learning (Retrieval)	Future learning	Common Misconceptions
<p>Evolution and inheritance</p> 	<ul style="list-style-type: none"> Know how soil is made Know how fossils are formed Know about and explain the difference between sedimentary, metamorphic and igneous rocks. 	<ul style="list-style-type: none"> heredity as the process by which genetic information is transmitted from one generation to the next a simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model differences between species the variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation the variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction 	<ul style="list-style-type: none"> 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.
<p>National Curriculum Subject Content:</p>	<ul style="list-style-type: none"> 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. 		
<p>Knowledge:</p>			<p>Key Vocabulary</p>
<p>Intended Knowledge Substantive</p>	<ol style="list-style-type: none"> Know that living things have changed over time. Know that fossils show us living things which inhabited the Earth millions of years ago. Know that living things produce offspring of the same kind. Know that offspring vary and are not identical to their parents. Know how animals and plants are adapted to suit their environment. Know that adaptation may lead to evolution. 		<p>Adapted/adaptation, characteristics, environment, fossils, inherit/inheritance, offspring, suited, suitable, vary/variation.</p>
<p>Working Scientifically:</p>	<p>Enquiry</p>	<p>Working Scientifically Objectives</p>	<p>Working Scientifically Vocabulary</p>
<p>Disciplinary Knowledge:</p>	<p>Observe and raise questions about local animals and how they are adapted to their environment; Compare how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels.</p>	<ul style="list-style-type: none"> Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Describe and evaluate my own and others' scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. Ask my own questions about the scientific phenomena that I am studying 	<p>Observe, record, compare diagram, label,</p>
<p>Assessment Outcomes</p>	<p align="center">Substantive</p> <ul style="list-style-type: none"> I know that living things have changed over time and that fossils provide information about things that lived on the Earth millions of years ago I know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents 		<p align="center">Disciplinary</p> <ul style="list-style-type: none"> I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
<p>Significant people/places</p>	<ul style="list-style-type: none"> Charles Darwin and Alfred Wallace – developed the theory of evolution. 		

**Science Unit of Work
Year 6**

Unit	Prior learning (Retrieval)	Future learning	Common Misconceptions
<p>Living things and their habitats</p> 	<ul style="list-style-type: none"> Know groups of animals and the basic characteristics of these groups. (fish, amphibians, reptiles, birds, and mammals and invertebrates) Know how to use classification keys to help group, identify and name living things. Know some ways that humans impact positively on environments. (nature reserves, ecologically planned parks, or garden ponds) Know some ways that humans impact negatively on environments. (population and development, litter or deforestation) 	<ul style="list-style-type: none"> the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops the importance of plant reproduction through insect pollination in human food security how organisms affect, and are affected by, their environment, including the accumulation of toxic materials. 	<ul style="list-style-type: none"> All micro-organisms are harmful. Mushrooms/fungi are plants.
<p>National Curriculum Subject Content:</p>	<ul style="list-style-type: none"> Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics. 		
<p>Knowledge:</p>		<p>Key Vocabulary</p>	
<p>Intended Knowledge Substantive</p>	<p>7) Know the names of groups of animals and the characteristics of each group. (reptile, mammal, fish, bird, amphibian)</p> <p>8) Know that living things can be grouped and know the characteristics related to each group. (plants, animals, fungi and micro-organisms)</p> <p>9) Know about groups of invertebrates (arachnids, molluscs, crustacean, insects)</p> <p>10) Know why living things belong to different classification groups.</p>		<p>Amphibians, arachnid, classification keys, crustacean, fungi, invertebrates, mammals, micro-organisms, mollusc, organism, reptiles, vertebrates.</p>
<p>Working Scientifically:</p>	<p>Enquiry</p>	<p>Working Scientifically Objectives</p>	<p>Working Scientifically Vocabulary</p>
<p>Disciplinary Knowledge:</p>	<p>Use/create classification keys to group, identify and name living things.</p>	<ul style="list-style-type: none"> Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Ask my own questions about the scientific phenomena that I am studying, and select the most appropriate ways to answer these questions, recognising and controlling variables where necessary (i.e. 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) 	<p>Classify, group, classification key, difference, similarity, observe</p>
<p>Assessment Outcomes</p>	<p align="center">Substantive</p> <ul style="list-style-type: none"> I know the names of groups of animals and the characteristics of each group. 		<p align="center">Disciplinary</p> <ul style="list-style-type: none"> I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. I can give reasons for classifying plants and animals based on specific characteristics.
<p>Significant people/places</p>	<ul style="list-style-type: none"> Carl Linnaeus - most famous for creating a system of naming plants and animals—a system we still use today. This system is known as the binomial system. 		

**Science Unit of Work
Year 6**

Unit	Prior learning (Retrieval)	Future learning	Common Misconceptions
Light 	<ul style="list-style-type: none"> Know that we need light in order to see things Know that dark is the absence of light. Know that light is reflected from surfaces. Know that light from the sun can be dangerous and know ways to protect our eyes. Know that shadows are formed when light from a light source is blocked by an opaque object. Know how and why shadows change shape. Know and name opaque, translucent and transparent objects. 	<ul style="list-style-type: none"> Know how refraction of light can occur when light travels through different objects. 	<ul style="list-style-type: none"> We can still see even where there is an absence of any light Our eyes 'get used to' the dark The moon and reflective surfaces are light sources A transparent object is a light source Shadows contain details of the object, such as facial features on their own shadow Shadows result from objects giving off darkness
National Curriculum Subject Content:	<ul style="list-style-type: none"> 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 		
Knowledge:	Key Vocabulary		
Intended Knowledge Substantive	<ol style="list-style-type: none"> Know that light travels in straight lines Know simple parts of the eye Know how that objects either give out light or reflect light into the eye. Know how we see things from the light source into the eye then to the brain. Know why shadows have the same shape as objects that cast them. Know how simple optical instruments work eg telescope, periscope mirror and magnifying glass. 		shadow, reflect, mirror, transparent, translucent, opaque, light source, retina, optic nerve
Working Scientifically:	Enquiry	Working Scientifically Objectives	Working Scientifically Vocabulary
Disciplinary Knowledge:	Problem solving: Decide where to place rear-view mirrors on cars	Use simple models to describe scientific ideas Record data using an increasingly complex diagram Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	<ul style="list-style-type: none"> pattern seeking, fair test, predict, conclude, compare.
Assessment Outcomes	Substantive		Disciplinary
	<ul style="list-style-type: none"> I know that light travels in straight lines I know and can name simple parts of the eye I know that objects are either a light source or reflect light I know how we see things from a light source I know why shadows have the same shape as the objects that cast them I know how simple optical instruments work. 		<ul style="list-style-type: none"> I can solve problems based on a scientific question. I can use what I know to describe scientific ideas. I can plan different types of scientific enquiry to answer questions.
Significant people/places			