UKS2 YEAR A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1 & 2
	Electricity (Year 6)	**Properties and changes of materials (Year 5)**	**Animals including humans (year 5)**	**Animals including humans (Year 6)**	**Evolution and inheritance (Year 6)**
Knowledge	Understand the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Understand variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Recognise symbols when representing a simple circuit in a diagram.	Understand 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. Understand, based on evidence from comparative and fair	Describe the changes as humans develop to old age. When babies are young, they grow rapidly. They are very dependent on their parents. As they develop, they learn many skills. At puberty, a child's body changes and develops primary and secondary sexual characteristics. This enables the adult to reproduce. This needs to be taught alongside PSHE. The new statutory requirements for relationships and health education can be found below: statutory guidance on Physical health and mental wellbeing (primary	Understand 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. Understand the ways in which nutrients and water are transported within animals, including humans.	Understand 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. Understand how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

		tests, for the particular uses of everyday materials, including metals, wood and plastic. Understand that dissolving, mixing and changes of state are reversible changes. Understand 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.	and secondary). Other useful guidance includes: Joint briefing on teaching about puberty in KS2 from PHSE Association and Association for Science Education Briefing on humans development and reproduction in the Primary Curriculum from PHSE Association and Association for Science Education.		
Vocabulary	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	Puberty – the vocabulary to describe sexual characteristics	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle	offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils, evolve, evolution
Scientific Skills	Explain how a circuit operates to achieve particular operations, such as to control	Investigate the properties of different materials in order to recommend materials for particular	N/A	Create a role play model for the circulatory system. Carry out a range of pulse rate investigations:	Design a new plant or animal to live in a particular habitat.

	the light from a torch with different brightness's or make a motor go faster or slower. Make circuits to solve particular problems, such as a quiet and a loud burglar alarm. Carry out fair tests exploring changes in circuits. Make circuits that can be controlled as part of a DT project.	functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat. Explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate. Investigate rates of dissolving by carrying out comparative and fair test. Can create a chart or table grouping/comparing everyday materials by different properties Can use test evidence gathered about different properties to suggest an appropriate material for a particular purpose. Separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture.		fair test – effect of different activities on my pulse rate pattern seeking – exploring which groups of people may have higher or lower resting pulse rates observation over time - how long does it take my pulse rate to return to my resting pulse rate (recovery rate) pattern seeking – exploring recovery rate for different groups of people. Research the negative effects of drugs (e.g. tobacco) and the benefits of a healthy diet and regular exercise by asking an expert or using carefully selected secondary sources.	Use models to demonstrate evolution e.g. 'Darwin's finches' bird beak activity. Use secondary sources to find out about how the population of peppered moths changed during the industrial revolution. Make observations of fossils to identify living things that lived on Earth millions of years ago. Identify features in animals and plants that are passed on to offspring and explore this process by considering the artificial breeding of animals or plants e.g. dogs. Compare the ideas of Charles Darwin and Alfred Wallace on evolution. Research the work of Mary Anning and how this provided evidence of evolution.

		Explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning. Carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced? Research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton)			

UKS2 YEAR B	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1 & 2
	Forces (Year 5)	**Living things and their habitats (Year 5)**	**Living things and their habitats (Year 6)**	**Earth and Space (Year 5)**	**Light (Year 6)**
Knowledge	Understand that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Understand the effects of air resistance, water resistance and friction that act between moving surfaces. Understand that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	Understand the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Understand the life process of reproduction in some plants and animals.	Understand 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. Understand reasons for classifying plants and animals based on specific characteristics.	Understand the movement of the Earth, and other planets, relative to the Sun in the solar system. Understand the movement of the Moon relative to the Earth. Understand the Sun, Earth and Moon as approximately spherical bodies. Understand idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	Recognise that light appears to travel in straight lines. Understand the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Understand that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Understand the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Vocabulary	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers, bulbs, cuttings	vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, warm-blooded, cold-blooded, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers	Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit	As for Year 3 - Light, plus straight lines, light rays
Scientific **Skills**	Investigate the effect of friction in a range of contexts e.g. trainers, bathmats, mats for a helter-skelter. Investigate the effects of water resistance in a range of contexts e.g. dropping shapes through water and pulling shapes, such as boats, along the surface of water. Investigate the effects of air resistance in a range of contexts e.g. parachutes, spinners, sails on boats. Explore how levers, pulleys and gears work.	Use secondary sources and, where possible, first-hand observations to find out about the life cycle of a range of animals. Compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth. Look for patterns between the size of an animal and its expected life span. Grow and observe plants that reproduce asexually e.g. strawberries, spider plants, potatoes. Take cuttings from a range of plants e.g. African violet, mint.	Use secondary sources to learn about the formal classification system devised by Carl Linnaeus and why it is important. Use first-hand observation to identify characteristics shared by the animals in a group. Use secondary sources to research the characteristics of animals that belong to a group. Use information about the characteristics of an unknown animal or plant to assign it to a group. Classify plants and animals, presenting this in a range of ways e.g. Venn	Use secondary sources to help create a model e.g. role play or using balls to show the movement of the Earth around the Sun and the Moon around the Earth. Use secondary sources to help make a model to show why day and night occur. Make first-hand observations of how shadows caused by the Sun change through the day. Make a sundial. Research time zones. Consider the views of scientists in the past and evidence used to deduce shapes and movements of	Explore different ways to demonstrate that light travels in straight lines e.g. shining a torch down a bent and straight hose pipe, shining a torch through different shaped holes in card. Explore the uses of the behaviour of light, reflection and shadows, such as in periscope design, rear view mirrors and shadow puppets.

	Make a product that involves a lever, pulley or gear. Create a timer that uses gravity to move a ball. Research how the work of scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.	Plant bulbs and then harvest to see how they multiply. Use secondary sources to find out about pollination.	diagrams, Carroll diagrams and keys. Create an imaginary animal which has features from one or more groups.	the Earth, Moon and planets before space travel	