Year 6 Autumn 1: Electricity (Physics)

	Required prior knowledge	Knowledge to be explicitly taught	How knowledge will be built upon
Substantive	• A complete circuit must have a power source (cell/batteries) and have all the components connected in a loop. If it is missing any of these things it is an incomplete circuit (Y4 Sum). • A short circuit is the easiest route for electricity to travel and can be created by accident by connecting just the wire to the cell in a circuit. They can be dangerous (Y4 Sum). • Components include wire, lamp, buzzer, motor or switch Materials that allow electricity to flow through them easily are called electrical conductors; materials that do not are called electrical insulators (Y4 Sum). • Appliances use electricity to serve a purpose (e.g. toaster, kettle etc.) (Y4 Sum). • Energy can be transferred from one store to another store (Y5 Aut). • Fossil fuels, batteries and the Sun are all examples of chemical energy stores (Y5 Aut). • In a circuit that has a battery, the battery is a chemical store of energy. Energy is transferred electrically to the device in the circuit, but the device does not store energy. Instead, it changes the way that it is transferred (Y5 Aut). • **Geography**: Fossil fuels are materials made from fossils of organisms over millions of years, like coal and oil. Humans use these to run cars/electrical items (Y5 Aut).	• There are recognised **symbols** for cell, lamp, buzzer, motor, and switch. Wires are represented with straight lines. • As long as batteries have the same **voltage**, the size of the battery does not affect the brightness of the lamp/loudness of the buzzer (though the smaller batteries will not last as long as the larger ones). • Adding more cells in the circuit increases the voltage. Increasing the voltage in a circuit makes the lamp in the circuit get brighter or the buzzer get louder. • More than one lamp can be put into one circuit. They can be placed in **series** or in **parallel**. • In a **series** circuit, the lamps are placed in a **continuous** loop. In **parallel**, the lamps are placed in separate loops that both connect to the cell. • Connecting lamps in parallel means that if one lamp burns out the other will stay on and switches can be used to turn each lamp off independently. • Many of the **appliances** used in the home do not use batteries they use **mains electricity**. • Mains electricity is **generated** in a **power station** and transferred to our homes by overhead cables. Power stations can use both **renewable** and **non-renewable** sources of energy to generate electricity. • A **non-renewable energy resource** is one that is used much faster than it is created. Fossil fuels take millions of years to form but minutes to burn, so we will run out. Burning fossil fuels to transfer electrical energy is a non-renewable energy source. • **Renewable energy resources** quickly replenish themselves, meaning that we can use them again and again and we will not run out. **Wind**, **solar**, **geothermal** and **hydrological** power are all examples of renewable energy resources. • Coal, oil and gas are all used to generate electricity. The store of chemical energy in the fuel is transferred electrically to the appliances that we use in the home.	• **Geography**: Improving the environment, and places in the world that have climates or physical features that lend themselves to using renewable sources to generate electricity (Y6 Aut2). • Electric current is measured in amperes using an ammeter. Current is a flow of charge (KS3). • Current can be measured in parallel and series circuits. The current will be the same at all points in a series circuit (KS3). • Current splits where the circuit branches in a parallel circuit, currents add where branches meet (KS3). • Potential difference is measured in volts (V) using a voltmeter. It is measured across a component (KS3). • In a series circuit the sum of the potential difference across all components will equal the battery voltage. In a parallel circuit the potential difference across each of the components will be the same as that of the battery (KS3). • Resistance is measured in ohms and is the ratio of potential difference to current (KS3). Conducting and insulating components will differ in resistance (KS3).
Disciplinary	• **Mathematics**: Interpret/construct bar charts (Y3); discrete data is data you count; continuous data is data you can measure (Y4); interpret/construct bar, line graphs (Y4) • A&P: dependent, independent and control variables (Y3) • R&P: Line graphs can be used when data is continuous; bar charts can be used when data is discrete (Y5 Sum) • A&E: Draw conclusions (e.g. 'the greater the… , the greater the…') (Y4 Spr)	**Three different enquiries, where pupils will plan the most appropriate type of investigation and how they should present their results:** 1. **Investigating the effect of increasing voltage on the volume of a buzzer or the brightness of a lamp** 2. **Investigating the effect of changing the number of components in a circuit on the volume of a buzzer** • R&P: Decide which graph is most appropriate for the enquiry.	• Planning more complex investigations to answer more challenging questions (KS3).
VCs	• 4: Energy cannot be created or destroyed. When energy is transferred from one object to others, the total amount of energy in the universe remains the same; the amount that one object loses is the same as the other objects gain. Two examples of energy stores are thermal stores and chemical stores of energy (Y5).	• 4: Energy resources can be renewable (such as wind, solar, geothermal and hydrological) or non-renewable (such as fossil fuels).	• **Geography**: Use of energy resources to generate electricity (advantages and disadvantages). (Y6)

Year 6: Autumn 2 - Evolution (Biology)

Year 6: Autumn 2

Biology: Evolution

	Required prior knowledge	Knowledge to be explicitly taught	How knowledge will be built upon
Substantive	• Living things have adapted to their environment. This means they may not be able to survive in other habitats (Y2 Spr). • A fossil is physical evidence of an ancient plant or animal , this could be their preserved remains or other traces that they made when they were alive. Trace fossils are not physical remains of living things they are indirect evidence of life (Y3 Aut). • A species is a group of one type of organism, individuals in this group can breed with each other to produce offspring that can go on to breed. (Y4 Aut). • **Geography**: Animals and plants have adapted to life in the rainforest (buttress roots, lianas, spider monkey, toucan, and fire ants) (Y4 Spr). • Sexual reproduction is two parents - usually male and female - create a new organism by mixing their genomes (Y5 Spr). • **History**: Homo sapiens first lived in East Africa ~200,000 BC and migrated across the world over 1000s of years (Y5 Sum). • **Geography**: Flora and fauna that have adapted to life in the tundra (Arctic hare, polar bear) hot desert (cactus, camel, Saharan silver ant, cape ground squirrel) temperate forest (deciduous and coniferous trees, red squirrels, hedgehogs, and southern wood ants) coral reefs (soft coral, pistol shrimp & goby fish, octopus & grouper) (Y5 Sum).	• **Variation** occurs within and between **species.** • Variation can be **environmental** or **genetic**, or a mixture of both. • **Genetic** variation happens randomly through the mixing of **genomes** in **sexual reproduction**. • Some variation is **advantageous** to the organism in their environment; sometimes it is **disadvantageous**; and sometimes it gives no advantage/disadvantage. • An **organism** with **advantageous traits** are more likely to survive and reproduce, passing those traits to the next generation. This is called **natural selection.** • These advantageous traits - **adaptations** - can be **physiological**, **structural** and **behavioural.** • Over many generations, the species will **evolve** so that all organisms have this adaptation/advantageous trait. • **Homo sapiens** originated in many parts of Africa. • **Fossils** provide evidence for evolution, because they show how organisms have changed over time. • Scientists involved in the development of evolutionary biology include Al-Jahiz, Charles Darwin, Alfred Wallace, Mary Anning and Dr Danielle Lee.	• Hereditary is the process by which genetic variation is transmitted from one generation to the next (KS3). • Chromosomes are made of DNA. Small sections of DNA are called genes. We inherit genes from our parents, and this is how genetic variation is transmitted from one generation to the next (KS3). • Variation between individuals of the same species is either continuous or discontinuous, this variation means that some individuals will compete more successfully and are more likely to survive, this drives a process known as natural selection. In this process advantageous versions of genes are passed onto offspring (KS3). • Changes to the environment can lead to individuals of some species or even entire species less well adapted to their environment. This can lead to extinction. Biodiversity is important and we need to maintain it (KS3).
Disciplinary	• A&E: Identify scientific evidence that has been used to support or refute ideas (Y4 Aut). • R&P: Use a Venn diagram to classify items into two or three sets based on properties (Y1 Sum). • A&P: Science is never 'complete' and scientists are always working to make models more accurate or to discover new explanations (Y5 Sum).	***Sort variations within species in a Venn diagram, based on whether they are genetic, environmental or a mixture of both.*** ***Identify how evidence of fossils has been used to support to change the theory of the evolution of Homo sapiens.***	
VCs	• 10: Living things are adapted to their environments. If the environment changes, the organisms may no longer be adapted and may struggle to survive (Y2).	• 10: Variation exists within species, caused by genetic and environmental factors. Living things are found in certain environments because they have the features that enable them to survive there. This adaptation to their environment has come about because of the small differences that occur during reproduction, resulting in some individuals being better suited to the environment than others. In the competition for materials and food, those that are better adapted will survive and are more likely to pass on their adapted feature to their offspring. Fossils are evidence of evolution.	• 10: The natural selection of organisms has been going since the first form of life appeared on Earth 3.5 billion years ago. Multi-cellular organisms evolved around 2 billion years ago (KS3).

Year 6 : Spring 1 - Light (Physics)

Year 6: Spring 1

Physics: Light

	Required prior knowledge	Knowledge to be explicitly taught	How knowledge will be built upon
Substantive	• We see shadows during the day and rainbows when there is sunshine and rain (N3-4 Aut1). • Light travels in straight lines (Y3 Aut). • We see when light enters our eyes (Y3 Aut). • Darkness is the absence of light (Y3 Aut). • Sources of light emit their own light, and others reflect light; both occur in nature as well as man-made objects (Y3 Aut). • Opaque, translucent and transparent materials allow no, some or all light to pass through them (Y3 Aut). • Shadows form behind an opaque object when light from a source is blocked (Y3 Aut). • The shape and position of shadows changes with the angle of the light source (Y3 Aut). • The size of shadows changes when the distance of the light source changes (Y3 Aut). • Light from the sun can be dangerous and there are ways to protect our eyes and skin. (Y3 Aut). • Energy can be transferred from one store to another store (Y5 Aut). • Fossil fuels, batteries and the Sun are all examples of chemical energy stores (Y5 Aut). • When energy is transferred from one store to another, it can be transferred by light or electrically (Y5 Aut). • When energy is removed from one store and is transferred to another store, the amount of energy in the first store goes down and the amount of energy in the second store goes up (Y5 Aut). • Energy is not used up; it is just moved around from store to store (Y5 Aut).	• When light meets an opaque object, some of the light is reflected and some of it is absorbed. • Shadows have the same shape as the objects that cast them because light travels in straight lines. • The size and shape of shadows behind an **opaque** object can be explained using ray diagrams. • Objects **emit** (give out) or **reflect** light into the eye. We see things because light travels from **light sources** to our eyes, or from light sources to objects and then to our eyes • Objects would be invisible if they did not reflect light. • The eye is made of many parts: the **pupil** is the circular black hole in the center of the eye, the **iris** is the coloured part of the eye that surrounds the pupil, and the **lens** is a structure found behind the pupil. • The pupils allow light to enter the eye. • The iris controls how much light enters the eye by changing the size of the pupil. • The lens helps to focus the light rays entering the eye. • **White light**, which comes from most light sources we use in the classroom, contains all the colours of the **visible spectrum** (red, orange, yellow, green, blue, indigo, violet). • When a light meets a surface, some colours are **absorbed** and some are **reflected**. We see the colour(s) that are reflected. • Objects appear black if they absorb all the colours in white light and reflect none. Objects appear white if they reflect all the colours in white light, and absorb none. • Many problems with our vision are caused by parts of the eye that are the not the right shape or size, or that have become cloudy. Many of these problems can be corrected through surgery or **prescription** glasses. • People living with sight loss or blindness may use long canes or guide dogs when outside, talking books or **Braille**, and different devices in the home. • On a flat surface, all light meeting a surface from one direction will be reflected in the same direction. This is known as **specular reflection.** • On a rough surface, light will be reflected in all directions. This is known as **diffuse reflection.** • Specular reflection between mirrors allow us to see the objects that do not directly reflect light into our eyes (e.g. periscope).	• The transmission of light through materials, to include absorption, diffuse scattering and specular reflection at a surface (KS3). • Light waves can travel through a vacuum they do not require a medium (KS3). • Light waves travel at the speed of light (KS3). • The similarities and differences between light waves and waves in matter (KS3). • Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and the action of a convex lens in focusing (KS3). • The human eye (KS3). • Light transferring energy from a source to an absorber leading to chemical and electrical effects; photosensitive material in the retina and in cameras (KS3). • Colours and the different frequencies of light, white light and prisms; differential colour effects in absorption and diffuse reflection (KS3).
DK	• R&P: Draw a diagram, a simple scientific drawing that explains or informs.	***Draw ray diagrams to show how light travels and how shadows are formed***	
VCs	• 2: Objects can affect other objects even when they are not in contact with them. Light reaches our eyes, even though the light source may be far away (Y3). • 6: The Sun emits light, some of which reaches Earth. The Moon reflects light from the Sun (Y3).	• 11: Visual impairments include long and short sightedness, colour vision deficiency, and blindness. Some of these can be corrected, and some people with visual impairments will use Braille, magnifying devices, canes and/or guide dogs.	• 4: Energy can be transferred as radiation (KS3).

Year 6: Spring 2 - Further Classification (Biology)

Year 6: Spring 2

Biology: Further Classification

	Required prior knowledge	Knowledge to be explicitly taught	How knowledge will be built upon
Substantive	• Coniferous plants keep their leaves all year round; deciduous plants lose their leaves in winter (Y1 Aut). • The **stem/trunk** supports the plant and transports water up the plant. The **xylem** transports water and nutrients from the roots, and the **phloem** transports food from the leaves to the all parts of the plant (Y3 Spr2). • Seeds can be dispersed by wind (e.g. sycamore), by animals in their droppings (e.g. things that are eaten, like a raspberry), attached to animal fur (e.g. goosegrass), or seeds can be self-propelled (pea pod) (Y3 Spr2). • Classification refers to a method used to place all living things into groups. Organisms can be classified in a number of ways (Y4 Aut). • A species is a group of one type of organism, individuals in this group can breed with each other to produce offspring that can go on to breed (Y4 Aut). • Fish, amphibians, reptiles, birds and mammals are all vertebrates. Vertebrates have endoskeletons (Y4 Aut). • Vertebrates can be grouped in a number of ways based on their characteristics, e.g. warm/cold blooded; or physical features like fur, beak, wings etc. (Y4 Aut). • Invertebrates can be grouped based on their characteristics as snails and slugs; worms; spiders and insects (Y4 Aut). • Invertebrates can be grouped based on their skeletons; endoskeletons, exoskeletons, or hydrostatic skeletons (Y4). • Plants can be grouped into flowering and non-flowering plants (Y4 Aut). • A cell is the smallest building block of living things. All organisms are made of cells (Y5 Spr). • Asexual reproduction does not involve sex cells or fertilisation. Only one parent is needed, and the offspring are (genetically) identical to the parent and each other (Y5).	• **Invertebrates** can be grouped based on their characteristics as poriferans (sponges) cnidarians, echinoderms, molluscs, annelids, platyhelminths and arthropods. • **Arthropods** can be grouped into 4 sub-groups: spiders, insects, crustaceans and myriapods). • Plants can be grouped into moss, ferns, conifers and flowering plants. • **Fungi** are different to plants and animals. They cannot make their own food (like animals) but do not move (like plants). • **Micro-organisms** are organisms that are so small that we cannot see them with our eyes alone. • Some **fungi** are microorganisms (e.g. yeast), but not all are (e.g. mushrooms). • **Bacteria** and viruses are microorganisms. • Some **bacteria** can cause disease in other organisms. • Some bacteria are helpful for other organisms (e.g. those that help break down food in our digestive system) and those that form part of a **symbiotic relationship.**	• Plants and animals are made of cells. There are similarities and differences between the cells of animals and plants (KS3). • Many plant cells have chloroplasts, and this enable plants to photosynthesise. The reactants of this process are carbon dioxide and water, and the products are sugar (glucose) and oxygen (KS3). • The differences between species and how this difference can drive natural selection. (KS3).
Disciplinary	• Gather information from text/books/images (Y2 Spr) and the internet (Y3 Spr). • R&P: Use a classification key to identify an object (Y4 Aut). • R&P: Draw a dichotomous classification key to help others identify an object (Y4 Aut). • R&P: Present information in a written format (Y4 Sum).	***Use and draw classification keys to help classify invertebrates and plants*** ***Research the harmful effects that bacteria can have on humans and other organisms, and present this information in a written format.***	
VCs	• 7: A cell is the smallest building block of living things. All organisms are made of cells (Y5).	• 7: Micro-organisms are organisms that are so small that we cannot see them with our eyes alone.	• 7: All organisms are made of one or more cells. All the basic functions of life – growth, reproduction, extracting energy from food – are the results of what happens inside cells. Cells are often aggregated into tissues, tissues into organs, and organs into organ systems (KS3).

Year 6: Summer 1 - Functions of the Human Body (Biology)

Year 6: Summer 1

Biology: Functions of the Human Body

	Required prior knowledge	Knowledge to be explicitly taught	How knowledge will be built upon
Substantive	•Humans are made of many different body parts (Y1 Sum). •Humans need exercise to stay healthy (Y2 Aut). •Living things **m**ove, **r**eproduce, are **s**ensitive to their **s**urroundings, **g**row, need oxygen, get rid of their **w**aste, and need **n**utrition (MRS GOWN) (Y2 Spr) •Humans need a balanced diet of these food groups (Y3 Spr). •Organs are parts of the body that do a particular job, the heart pumps blood around the body and the lungs are used for breathing which gets air into your body (Y3 Spr). •Oxygen and carbon dioxide are found in the air (Y3 Spr). •The digestive system is the group of organs that help your body digest food (Y4 Aut). •Food is further broken down (chemical digestion) in the small intestines where most of the nutrients are absorbed (Y4 Aut). •A cell is the smallest building block of living things. All organisms are made of cells (Y5 Spr). •There are lots of different types of cell, which each have different purposes (Y5 Spr).	•Living things **m**ove, **r**eproduce, are **s**ensitive to their **s**urroundings, **g**row, respire, **e**xcrete, and need **n**utrition (MRS GREN). •**Respiration** provides the energy needed for organisms to function. **Oxygen** and **glucose** (a sugar) are needed by **cells** for respiration. Carbon dioxide is a waste product of respiration and needs to be **excreted**. •**Blood** carries **oxygen**, **glucose**, **nutrients**, and **carbon dioxide** to and from cells around the body. •The **heart** is a muscle that pumps the blood through the **blood vessels**. •The heart pumps **deoxygenated** blood to the lungs, where oxygen is transferred to it, and it flows back to the heart. The heart pumps **oxygenated** blood to the rest of the body, where the oxygen is transferred to the organs/muscles and carbon dioxide is transferred to the blood. Deoxygenated blood then travels back to the heart to begin the process again. •**Glucose** and **nutrients** are absorbed by the blood along the **small intestine** and transported to cells. •**Arteries** carry blood away from the heart. Arteries have thick walls because they carry blood from the heart which is at a high pressure. Blood is being pumped through very quickly. Arteries mostly carry oxygenated blood. •**Veins** carry blood back to the heart. They mostly carry deoxygenated blood. •Arteries branch into smaller blood vessels called **capillaries**, which are very small and supply our cells with oxygen, glucose and nutrients. Capillaries collect carbon dioxide from cells and merge into veins. •The **heart rate** is how quickly the heart pumps. It is usually measured in beats/min. Muscles need more oxygen when they are being used in exercise, so the heart rate increases. •Being **healthy** means being in a state of **physical**, **mental** and **social** wellbeing and free from disease. •Diet and exercise can have a positive effect on our bodies. Other lifestyle choices impact our health. •A **drug** is a substance that, when taken into the body, has an effect on it. Some drugs (**medicines**) are helpful, and some are only harmful. All drugs are harmful when taken in the wrong quantities. •Tobacco smoke contains nicotine, tar and carbon monoxide. These have a damaging effect on the body.	•The hierarchical organisation of multicellular organisms. Organisms consist of organ systems which are made of organs. Organs are a collection of different tissues and tissues are made of cells. An example being the circulatory system (KS3). •Aerobic respiration occurs in the cells of organisms, it involves the breakdown of organic molecules (sugar) and using oxygen (KS3). •The blood is oxygenated in the lungs and this is transported to the organs (and cells) that require it for aerobic respiration, along with sugar, by the blood vessels in the circulatory system (KS3). •Gas exchange systems in humans are adapted to their function as they have many alveoli which provides a large surface area for diffusion (KS3). •The mechanism of breathing moves air in and out of the lungs (KS3). •The role of diffusion in the movement of materials in and between cells (KS3). •The impact of smoking on the human gas exchange surface (KS3).
Disciplinary	•Mathematics: Calculate/ interpret the mean (Y6). •A&P: Make a prediction based on substantive knowledge (Y2 Aut); A&E: Use scientific understanding to explain their findings (Y3 Sum). •M&O: Taking multiple readings allows you to see if your data is repeatable and helps identify outliers.	***Investigate the effect of exercise on heart rate*** •M&O: Planning to take multiple readings allows anomalous data to be identified and enables a mean to be calculated. Repeats show if our data is repeatable. •A&E: Calculating the mean can be used as a method of analysing data. ***Research effects of smoking on the human body, and how our scientific understanding has changed over time, including in the current day.***	
VCs	•4: All living things need food to give them energy and other things (Y2). •7: A cell is the smallest building block of living things. All organisms are made of cells (Y5). •8: Living things move, reproduce, are sensitive to their surroundings, grow, need oxygen, get rid of their waste, and need nutrition (MRS GOWN) (Y2). •11: Ageing happens naturally, and can be sped up by environmental factors like smoking (Y5).	•4: All organisms respire. •7: Respiration takes place in cells. •8: Living things move, reproduce, are sensitive to their surroundings, grow, respire, excrete, and need nutrition (MRS GREN). •11: Being healthy means we are in a state of physical, mental and social well being and are free from disease. Some drugs can help us and some can harm us (particularly in the wrong quantities).	•4: Biological process of respirations, including reactants and products (KS3). •7: All organisms are made of cells. All the basic functions of life are the results of what happens inside cells. Cells are often aggregated into tissues, tissues into organs, and organs into organ systems (KS3). •11: The biological causes and effects of diseases, exercise, lifestyles and deficiencies on the body (KS3).

Year 6: Summer 2 - Physical and Chemical Changes (Chemistry)

Year 6: Summer 2

Chemistry: Physical & Chemical Changes

	Required prior knowledge	Knowledge to be explicitly taught	How knowledge will be built upon
Substantive	• Digestion in the human body can be chemical and mechanical (Y4 Aut). • Physical properties are properties that we can measure or observe in the classroom. They include electrical conductivity; melting and boiling points; thermal conductivity; being malleable; windproof; hard/soft; and magnetic (Y4 Sum). • Chemical properties are properties that scientists need specialist equipment to measure. They include flammability and toxicity (Y4 Sum). • A mixture is two or more substances, e.g. air, steel (Y5 Aut). • Mixtures can be made of two gases (e.g. air), two solids (e.g. steel), two liquids (e.g. squash and water), or a liquid and a solid (e.g. salt water) (Y5 Aut). • A solvent is a liquid that is used to dissolve other substances (Y5 Aut). • A reversible change is a change that can be undone, where the original substances can be recovered (Y5 Aut). • An irreversible change is a change that cannot be undone, where the original substances cannot be recovered (Y5 Aut). • Carbon dioxide is produced when fossil fuels are burned.(Geo Y5 Sum).	• A mixture is two or more substances that are mixed but not chemically joined together. • Distillation is a separating technique that can separate a solvent from a solution. It relies on evaporation and condensation. • Chromatography is a separation technique in which a mixture is dissolved into a solvent, and the components of the mixture are carried by the solvents at different rates. • A chemical change is a change where a new substance is formed. • A chemical change has usually taken place if: gas bubbles appear; a new solid appears; it changes colour; or changes temperature. • A physical change is where the substance changes its properties, but it does not become a different substance. • Some chemical changes are irreversible, (e.g. cook an egg, rusting iron), but some can be reversed. • Most physical changes are reversible (e.g. water to ice), but some are not (e.g. crack an egg, turn wood into sawdust). • Chemical reactions can be summarised using word equations. • Word equations show the names of the chemicals reacting and the names of the products formed. • A combustion reaction occurs when a fuel is heated and reacts with oxygen. A product of a combustion reaction is carbon dioxide. Combustion is an irreversible chemical reaction. • Rust is an irreversible chemical reaction. It requires iron, water and oxygen.	• In a chemical reaction, mass is conserved (KS3). • In a chemical reaction, there is a rearrangement of atoms (KS3). • Chemical reactions can be represented using formulae and equations (KS3). • Examples of types of chemical reactions include combustion, thermal decomposition, oxidation neutralisation and displacement (KS3). • Reactions of acids with metals produces a salt and hydrogen (KS3). • Reactions of acids with alkalis produces a salt and water (KS3). • Reactions can be endothermic or exothermic (KS3).
Disciplinary	• A&P: Scientists group objects or living things based on their properties (Y1 Spr). • A&P: Make a prediction based on substantive knowledge. • A&P: Scientists identify potential hazards in their experiments and plan ways to reduce them (Y2 Spr). • R&P: Use a Carroll diagram to classify items based on properties (Y1 Spr). • R&P: Present information in a written format.	***Use a Carroll diagram to classify changes as physical/chemical and reversible/irreversible*** ***Carry out changes and identify whether the change created is physical/chemical and reversible/irreversible***	
VCs	• 1: Properties of materials can be physical (such as hardness) or chemical (such as toxicity). (Y4)	• 1: A chemical change is where a new substance – that is made of a different type of particle – is formed.	• The smallest piece of a material is called an atom. All materials, anywhere in the universe, living and non--living, are made of a very large numbers of these basic 'building blocks', of which there are about 100 different kinds (KS3).