

|         | Reception  | Year 1  | Year 2   | Year 3   | Year 4   | Year 5   | Year 6   | Year 7   | Year 8   | Year 9   | Year 10   | Year 11   |
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| Biology | <ul style="list-style-type: none"> <li>●Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>● To be able to name some objects found in the natural world e.g. conker, acorns, pine cone, chestnut</li> <li>● To know what a plant needs to grow and to be able to name some plants</li> <li>● To be able to categorise farm and wild animals and pets</li> <li>● To be able to name and describe some common bugs</li> </ul> | <p><b>Plants:</b></p> <ul style="list-style-type: none"> <li>●Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>●Identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul> <p><b>Humankind – Human Body:</b></p> <ul style="list-style-type: none"> <li>●The basic body parts are the head, arms, legs, nose, eyes, ears, mouth, hands and feet.</li> <li>●The five senses are hearing, sight, smell, taste and touch.</li> <li>●Ears are used for hearing.</li> <li>●Eyes are used to see.</li> <li>●The nose is used to smell.</li> <li>●The tongue is used to taste.</li> <li>●The skin gives the sense of touch.</li> </ul> | <p><b>Plants:</b></p> <ul style="list-style-type: none"> <li>●Observe and describe how seeds and bulbs grow into mature plants</li> <li>● Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul> <p><b>Humankind – Human Body:</b></p> <p>Humans grow from baby to toddler to child to teenager to adult to elderly.</p> <p><b>Living Things and their Habitats:</b></p> <ul style="list-style-type: none"> <li>●Explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>●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</li> </ul> | <p><b>Plants:</b></p> <ul style="list-style-type: none"> <li>●Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>●Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</li> <li>●Investigate the way in which water is transported within plants</li> <li>●Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul> <p><b>Humankind – Human Body:</b></p> <ul style="list-style-type: none"> <li>●Humans have a skeleton and muscles for movement, support and protecting organs.</li> <li>●Muscles are soft tissue made up of many stretchy fibres.</li> <li>●Muscles allow us to move, breathe and digest food.</li> <li>●The three main types of muscle in the human body</li> </ul> | <p><b>Humankind – Human Body:</b></p> <ul style="list-style-type: none"> <li>●The digestive system is responsible for digesting food and absorbing nutrients and water.</li> <li>●The mouth, oesophagus, small intestine and large intestine are organs of the digestive system.</li> </ul> <p><b>Living Things and their Habitats:</b></p> <ul style="list-style-type: none"> <li>●Recognise that living things can be grouped in a variety of ways</li> <li>●Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>●Recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul> | <p><b>Humankind – Human Body:</b></p> <ul style="list-style-type: none"> <li>●Humans reproduce sexually when a female egg is fertilised by a male sperm producing offspring that are different from the parents.</li> </ul> <p><b>Living Things and their Habitats:</b></p> <ul style="list-style-type: none"> <li>●Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>●Describe the life process of reproduction in some plants and animals.</li> </ul> | <p><b>Humankind – Human Body:</b></p> <ul style="list-style-type: none"> <li>●The heart, blood and blood vessels make up the circulatory system.</li> <li>●The circulatory system moves blood around the body.</li> <li>●The heart is a muscular organ that pumps blood around the body through the blood vessels.</li> <li>●Blood vessels are tubes inside the body.</li> <li>●The three types of blood vessels are arteries, capillaries and veins.</li> <li>●Arteries carry blood from the heart to the rest of the body.</li> <li>●Capillaries connect arteries to veins. They allow oxygen and other nutrients to pass from the blood to the tissues, and carbon dioxide and other waste materials to pass from the tissues to the blood.</li> <li>●Veins carry blood from around the body back to the heart.</li> <li>●Blood is a substance that carries oxygen, other nutrients and hormones around the body. It also carries carbon dioxide and other waste products so they can be excreted.</li> </ul> | <p><b>Cells</b></p> <ul style="list-style-type: none"> <li>●Identify features of animal and plant cells</li> <li>●Identify life processes</li> <li>●Describe the organs in some organ systems</li> </ul> <p><b>Sexual reproduction in animals</b></p> <ul style="list-style-type: none"> <li>●Steps in animals sexual reproduction (humans)</li> <li>●Name the male and female reproductive organs</li> <li>●Describe stages in pregnancy and birth</li> </ul> <p><b>Muscles and bones</b></p> <ul style="list-style-type: none"> <li>●Describe how muscles are used for breathing</li> <li>●Describe how oxygen gets to muscles</li> <li>●Structure and function of the skeleton</li> </ul> <p><b>Ecosystems</b></p> <ul style="list-style-type: none"> <li>●Types of variation</li> <li>●Adaptations of plants and animals</li> <li>●Daily and seasonal changes and adaptations</li> <li>●Transfer of energy in food chains</li> </ul> | <p><b>Food and nutrition</b></p> <ul style="list-style-type: none"> <li>●What nutrients are and what they do</li> <li>●Components of a balanced diet</li> <li>●Steps in digestion and the organs involved (and the role of enzymes)</li> <li>●Absorption (adaptations of the intestine)</li> </ul> <p><b>Plants and their reproduction</b></p> <ul style="list-style-type: none"> <li>●Classification of plants</li> <li>●What biodiversity means and why it is important</li> <li>●Types of plant reproduction</li> <li>●Steps in plant reproduction</li> </ul> <p><b>Breathing and respiration</b></p> <ul style="list-style-type: none"> <li>●Describe aerobic respiration</li> <li>●Understand how gases are exchanged in the lungs</li> <li>●The role of blood in carrying oxygen</li> <li>●Describe anaerobic respiration</li> </ul> <p><b>Unicellular organisms</b></p> <ul style="list-style-type: none"> <li>●Understand different types of unicellular organisms</li> <li>●Understand the structure of microscopic fungi</li> <li>●Describe the structure of protoctists</li> <li>●Understand how unicellular organisms can be helpful and harmful</li> <li>●The carbon cycle</li> </ul> | <p><b>Plant Growth</b></p> <ul style="list-style-type: none"> <li>● Reactants and products of photosynthesis</li> <li>●Cellular respiration</li> <li>●Adaptation of plants</li> <li>●Dependence of life on plants</li> </ul> <p><b>Genetics and Evolution</b></p> <ul style="list-style-type: none"> <li>●Heredity and chromosomes</li> <li>●Development of DNA model</li> <li>●Variation between species</li> <li>●Importance of biodiversity</li> </ul> <p><b>Key concepts in Biology</b></p> <ul style="list-style-type: none"> <li>●Plant, animal and bacterial cells</li> <li>●Specialised cells</li> <li>●Enzymes</li> <li>●Testing foods</li> <li>●Transporting substances (diffusion, osmosis and active transport)</li> </ul> <p><b>Cells and control</b></p> <ul style="list-style-type: none"> <li>●Stages in mitosis</li> <li>●Growth in animals and plants</li> <li>●Stem cells</li> <li>●The nervous system including types of nerves, reflex arc and synapse</li> <li>●Structure and function of the brain</li> <li>●Structure and function of the eye</li> </ul> | <p><b>Natural selection and GM</b></p> <ul style="list-style-type: none"> <li>●Evidence for human evolution</li> <li>●Understand Darwin’s theory of evolution</li> <li>●The classification system</li> <li>●The differences between breeds and varieties</li> <li>●Tissue culture</li> <li>●Genetic modification including benefits and drawbacks</li> <li>●Fertilisers and biological control</li> </ul> <p><b>Health and disease</b></p> <ul style="list-style-type: none"> <li>●Communicable and non-communicable disease</li> <li>●Cardiovascular disease</li> <li>●Types of pathogens and pathogenic diseases</li> <li>●Virus life cycles</li> <li>●Defences against disease</li> <li>●Steps in making medicine</li> <li>●Antibiotics and monoclonal antibodies</li> </ul> <p><b>Plant structures and functions</b></p> <ul style="list-style-type: none"> <li>●Recall the photosynthesis equation</li> <li>●Factors affecting photosynthesis</li> <li>●Understand how plants absorb water and mineral ions</li> </ul> | <p><b>Exchange and transport in animals</b></p> <p>Adaptations for transport</p> <p>The circulatory system</p> <p>Structure of the heart</p> <p>Components of blood</p> <p>Aerobic and anaerobic respiration</p> <p><b>Ecosystems and material cycles</b></p> <ul style="list-style-type: none"> <li>●What an ecosystem is</li> <li>●Energy transfer</li> <li>●Abiotic factors</li> <li>●Biotic factors</li> <li>●Assessing pollution</li> <li>●Parasitism and mutualism</li> <li>●Biodiversity threats and conservation</li> <li>●Food security</li> <li>●Material cycles (water, nitrogen and carbon)</li> <li>●Rates of decomposition</li> </ul> |

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|  |  |  | <ul style="list-style-type: none"> <li>●Identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>●Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</li> </ul> | <p>are skeletal, cardiac and smooth.</p> <ul style="list-style-type: none"> <li>●A joint is where two or more bones meet and connect.</li> <li>●Parts of the human body can bend easily because the skeleton has lots of small bones and joints.</li> </ul> |  |  | <ul style="list-style-type: none"> <li>●Blood is made up of plasma, platelets, red blood cells and white blood cells.</li> <li>●Plasma is a yellowish liquid, mainly water. It carries red blood cells, white blood cells and platelets around the body.</li> <li>●Red blood cells carry oxygen and carbon dioxide around the body.</li> <li>●White blood cells fight infection and other diseases.</li> <li>●Platelets are small cell fragments that clump together to stop bleeding from a cut in a blood vessel.</li> </ul> <p><b><u>Living Things and their Habitat</u></b></p> <ul style="list-style-type: none"> <li>●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</li> <li>●Give reasons for classifying plants and animals based on specific characteristics.</li> </ul> <p><b><u>Evolution and Inheritance:</u></b></p> <ul style="list-style-type: none"> <li>●Recognise that living things have changed over time</li> </ul> |  |  |  | <ul style="list-style-type: none"> <li>●Transpiration and translocation</li> <li>●<i>Plant adaptations</i></li> <li>●<i>Plant hormones</i></li> </ul> <p><b><u>Animal coordination and control</u></b></p> <ul style="list-style-type: none"> <li>●What hormones are and examples of human hormones</li> <li>●<i>Metabolic rate</i></li> <li>●Hormones and the menstrual cycle</li> <li>●Control of blood glucose and diabetes (types 1 and 2)</li> <li>●<i>Thermoregulation</i></li> <li>●<i>Osmoregulation and structure and function of the kidneys</i></li> </ul> |  |
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|           |  |   |  |  |  |   | <p>and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <ul style="list-style-type: none"> <li>●Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>●Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul> |   |   |  |  |  |
| Chemistry | <ul style="list-style-type: none"> <li>● To be able to comment on the changes of the properties of objects e.g paint, ice and food</li> <li>●Talk about some properties of materials e.g. reflective, soft, hard.</li> </ul> | <p><b>Everyday Materials:</b></p> <ul style="list-style-type: none"> <li>●Distinguish between an object and the material from which it is made</li> <li>●Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>●Describe the simple physical properties of a variety of everyday materials</li> <li>●Compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul> | <p><b>Everyday Materials:</b></p> <ul style="list-style-type: none"> <li>●Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>●Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul> | <p><b>Rocks:</b></p> <ul style="list-style-type: none"> <li>●Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>●Describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>●Recognise that soils are made from rocks and organic matter.</li> </ul> | <p><b>States of Matter:</b></p> <ul style="list-style-type: none"> <li>●Compare and group materials together, according to whether they are solids, liquids or gases</li> <li>●Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</li> <li>●Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul> | <p><b>Properties and changes of Materials:</b></p> <ul style="list-style-type: none"> <li>●Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</li> <li>●Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>●Use knowledge of solids, liquids and gases to decide how mixtures might</li> </ul> |  | <p><b>Mixtures and separation</b></p> <ul style="list-style-type: none"> <li>●Define mixtures</li> <li>●Describe solutions, solutes and solvents</li> <li>●Use evaporation to separate solutions</li> <li>●Use chromatography to separate colours</li> <li>●Use distillation to produce pure water</li> </ul> <p><b>Acids and alkalis</b></p> <ul style="list-style-type: none"> <li>●Know what some hazards are and how to stay safe</li> <li>●Understand what indicators do</li> <li>●Use the pH scale to measure acidity and alkalinity</li> <li>●Carry out neutralisation</li> </ul> <p><b>The particle model</b></p> <ul style="list-style-type: none"> <li>●Draw solids, liquids and gases using the particle model</li> <li>●Understand the properties of solids, liquids and gases</li> </ul> | <p><b>Combustion</b></p> <ul style="list-style-type: none"> <li>●Describe what happens when fuels are burned</li> <li>●Write word equations for oxidation</li> <li>●Understand how combustion can lead to air pollution and global warming</li> </ul> <p><b>The Periodic table</b></p> <ul style="list-style-type: none"> <li>●Describe Dalton’s atomic model</li> <li>●Describe the differences between chemical properties and physical trends</li> <li>●Describe chemical trends</li> </ul> <p><b>Metals and their uses</b></p> <ul style="list-style-type: none"> <li>●Describe the properties of metals</li> <li>●Describe the reactions of metals with water and acids</li> <li>●Describe the differences between alloys and pure metals</li> </ul> <p><b>Rocks</b></p> | <p><b>Making Materials</b></p> <ul style="list-style-type: none"> <li>●properties of ceramics</li> <li>●properties of polymers</li> <li>●properties of composites</li> <li>●Earth as a source of limited resources</li> </ul> <p><b>Reactivity</b></p> <ul style="list-style-type: none"> <li>●Reactivity series</li> <li>●Displacement reactions</li> <li>●Extracting metals</li> <li>●Endothermic and Exothermic reactions</li> </ul> <p><b>States of matter; separating mixtures</b></p> <ul style="list-style-type: none"> <li>●States of matter</li> <li>●Mixtures</li> <li>●Separating mixtures (chromatography, filtration, distillation, crystallisation)</li> <li>●Making drinking water</li> </ul> <p><b>Atomic structure</b></p> <ul style="list-style-type: none"> <li>●Structure of the atom</li> </ul> | <p><b>Acids and alkalis</b></p> <ul style="list-style-type: none"> <li>●Definitions of acids, alkalis and indicators</li> <li>●The pH scale</li> <li>●Neutralisation (with bases, carbonates and metals)</li> <li>●Solubility</li> </ul> <p><b>Calculations involving masses</b></p> <ul style="list-style-type: none"> <li>●Calculating empirical formulae</li> <li>●Law of conservation of mass</li> <li>●Concentration calculations</li> <li>●Moles</li> </ul> <p><b>Electrolysis and metals</b></p> <ul style="list-style-type: none"> <li>●Principles of electrolysis</li> <li>●Products from electrolysis</li> <li>●The reactivity series</li> <li>●Extracting metals from ores</li> </ul> | <p><b>Groups in the Periodic table, rates of reaction</b></p> <ul style="list-style-type: none"> <li>●Trends in groups 1,7 and 0</li> <li>●Rates of reaction</li> <li>●Factors affecting rates of reaction</li> <li>●Catalysts and activation energy</li> <li>●Exothermic and endothermic reactions</li> </ul> <p><b>Fuels, earth and atmosphere</b></p> <ul style="list-style-type: none"> <li>●Hydrocarbons in crude oil and natural gas</li> <li>●Fractional distillation of crude oil</li> <li>●Breaking down hydrocarbons</li> <li>●Complete and incomplete combustion</li> <li>●The early and modern atmosphere</li> </ul> <p><b>Hydrocarbons, alcohols, carboxylic acids</b></p> <ul style="list-style-type: none"> <li>●Structure and reactions of alkanes and alkenes</li> <li>●Ethanol production</li> <li>●Alcohols</li> <li>●Carboxylic acids</li> <li>●Polymerisation (addition and condensation)</li> <li>●Polymer problems</li> </ul> <p><b>Qualitative analysis and materials</b></p> <ul style="list-style-type: none"> <li>●Flame tests and photometry</li> <li>●Tests for positive ions</li> <li>●Tests for negative ions</li> <li>●Choosing materials</li> <li>●Composite materials</li> <li>●Nanoparticles</li> </ul> |

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|         |  |  |  |   |   | be separated, including filtering, sieving and evaporating <ul style="list-style-type: none"> <li>●Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>●Demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>●Explain 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.</li> </ul> |  | <ul style="list-style-type: none"> <li>●Describe Brownian motion and the evidence for this</li> <li>●Describe diffusion in fluids</li> <li>●Understand how air pressure is caused.</li> </ul> <p><u>Atoms, elements and molecules</u></p> <ul style="list-style-type: none"> <li>●What air is made of</li> <li>●Where elements come from</li> <li>●Metals and non-metals</li> <li>●What compounds are</li> <li>●What happens in chemical reactions</li> </ul> | <ul style="list-style-type: none"> <li>●Uses of rocks e.g. in building</li> <li>●How igneous, metamorphic and sedimentary rocks are formed</li> <li>●The fossil record</li> <li>●Getting materials from the Earth</li> </ul>   | <ul style="list-style-type: none"> <li>● Using the periodic table to see atomic number and mass</li> <li>●Isotopes</li> </ul> <p><u>The Periodic table</u></p> <ul style="list-style-type: none"> <li>●How elements are arranged in groups and periods</li> <li>●Atomic number and the Periodic table</li> <li>●Electron configuration</li> </ul>  | <ul style="list-style-type: none"> <li>●Oxidation and reduction</li> <li>●Life cycle assessment and recycling</li> <li>●Dynamic equilibrium</li> <li>●<i>Transition metals</i></li> <li>●<i>Corrosion</i></li> <li>●<i>Electroplating</i></li> <li>●<i>The process of alloying</i></li> <li>●<i>Uses of metals and their alloys</i></li> </ul> <p><u>Quantitative analysis, equilibria, chemical and fuel cells</u></p> <ul style="list-style-type: none"> <li>●<i>Yields</i></li> <li>●<i>Atom economy</i></li> <li>●<i>Concentrations</i></li> <li>●<i>Titration calculations</i></li> <li>●<i>Molar volumes of gases</i></li> <li>●<i>Fertilisers and the Haber process</i></li> <li>●<i>Factors affecting equilibrium</i></li> <li>●<i>Chemical cells and fuel cells</i></li> </ul> |   |
| Physics | <ul style="list-style-type: none"> <li>● To be able to name the four seasons and the connected weather</li> <li>●To observe seasonal changes and discuss these.</li> <li>●To categories objects into some characteristics e.g. sinking and floating</li> </ul> | <p><u>Seasonal Changes:</u></p> <ul style="list-style-type: none"> <li>●Observe changes across the four seasons</li> <li>●Observe and describe weather associated with the seasons and how day length varies.</li> </ul> |  | <p><u>Light:</u></p> <ul style="list-style-type: none"> <li>●Recognise that they need light in order to see things and that dark is the absence of light</li> <li>●Notice that light is reflected from surfaces</li> <li>●Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> </ul> | <p><u>Sound:</u></p> <ul style="list-style-type: none"> <li>●Identify how sounds are made, associating some of them with something vibrating</li> <li>●Recognise that vibrations from sounds travel through a medium to the ear</li> <li>●Find patterns between the pitch of a sound and features of</li> </ul> | <p><u>Forces:</u></p> <ul style="list-style-type: none"> <li>●Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>●Identify the effects of air resistance, water resistance and friction, that act</li> </ul>  | <p><u>Light:</u></p> <ul style="list-style-type: none"> <li>●Recognise that light appears to travel in straight lines</li> <li>●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</li> <li>●Explain that we see things because light travels from light sources to our</li> </ul> | <p><u>Energy</u></p> <ul style="list-style-type: none"> <li>●Know that food contains energy and how this can be measured</li> <li>●Understand energy transfers and stores</li> <li>●Describe what fuels are</li> <li>●Understand sources of renewable energy</li> </ul> <p><u>Current electricity</u></p> <ul style="list-style-type: none"> <li>●Understand how to make a series and parallel circuit</li> </ul>   | <p><u>Fluids</u></p> <ul style="list-style-type: none"> <li>●Using the particle model</li> <li>●Describe changes of state</li> <li>●Describe how pressure in fluids is created</li> <li>●Describe forces in floating and sinking</li> <li>●Drag as a type of friction</li> </ul> <p><u>Light</u></p> <ul style="list-style-type: none"> <li>●Describe luminous and non-luminous objects</li> </ul> | <p><u>Force Fields</u></p> <ul style="list-style-type: none"> <li>●Static Electricity</li> <li>●Electric Fields</li> <li>●Resistance of components</li> <li>●Electrical Current</li> <li>●Electromagnets</li> <li>●Magnetic fields</li> </ul> <p><u>Forces and Motion</u></p> <ul style="list-style-type: none"> <li>●Speed equation</li> <li>●Forces and Movement</li> <li>●change depending on direction of force and its size.</li> </ul> | <p><u>Waves</u></p> <ul style="list-style-type: none"> <li>●Describing waves</li> <li>●Wave speed</li> <li>●Refraction</li> <li>●<i>Waves crossing boundaries</i></li> <li>●<i>Ears and hearing</i></li> <li>●<i>Ultrasound</i></li> <li>●<i>Infrasound</i></li> </ul> <p><u>Light and the Electromagnetic Spectrum</u></p> <ul style="list-style-type: none"> <li>●<i>Ray diagrams</i></li> <li>●<i>Colour</i></li> <li>●<i>Lenses</i></li> </ul>  | <p><u>Electricity and Circuits</u></p> <ul style="list-style-type: none"> <li>●Electric circuits</li> <li>●Current and potential difference</li> <li>●Current charge and energy</li> <li>●Resistance</li> <li>●More about resistance</li> <li>●Transferring energy</li> <li>●Power</li> <li>●Transferring energy by electricity</li> <li>●Electrical safety</li> </ul> <p><u>Magnetism and the Motor Effect</u></p> <ul style="list-style-type: none"> <li>●Magnets and magnetic fields</li> <li>●Electromagnetism</li> <li>●Magnetic forces</li> </ul> <p><u>Electromagnetic Induction</u></p> |

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|  |  |  |  | <ul style="list-style-type: none"> <li>●Recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> <li>●Find patterns in the way that the size of shadows change.</li> </ul> <p><b>Forces and Magnets:</b></p> <ul style="list-style-type: none"> <li>●Compare how things move on different surfaces</li> <li>●Notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>●Observe how magnets attract or repel each other and attract some materials and not others</li> <li>●Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</li> <li>●Describe magnets as having two poles</li> <li>●Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul> | <p>the object that produced it</p> <ul style="list-style-type: none"> <li>●Find patterns between the volume of a sound and the strength of the vibrations that</li> <li>●produced it</li> <li>●Recognise that sounds get fainter as the distance from the sound source increases.</li> </ul> <p><b>Electricity:</b></p> <ul style="list-style-type: none"> <li>●Identify common appliances that run on electricity</li> <li>●Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>●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</li> <li>●Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>●Recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul> | <p>between moving surfaces</p> <ul style="list-style-type: none"> <li>●Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul> <p><b>Earth and Space:</b></p> <ul style="list-style-type: none"> <li>●Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>●Describe the movement of the Moon relative to the Earth</li> <li>●Describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>●Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul> | <p>eyes or from light sources to objects and then to our eyes</p> <ul style="list-style-type: none"> <li>●Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul> <p><b>Electricity:</b></p> <ul style="list-style-type: none"> <li>●Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>●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</li> <li>●Use recognised symbols when representing a simple circuit in a diagram.</li> </ul> | <ul style="list-style-type: none"> <li>●How to use switches in circuits</li> <li>●Describe some models for circuits and their limitations</li> <li>●Measure current and voltage with ammeters and voltmeters</li> <li>●Describe dangers of electricity and ways to stay safe</li> </ul> <p><b>Forces</b></p> <ul style="list-style-type: none"> <li>●Give examples of forces</li> <li>●Use a newtonmeter to measure forces</li> <li>●Understand what friction does</li> <li>●Understand how pressure is made and the equation for pressure</li> <li>●Understand balanced and unbalanced forces</li> </ul> <p><b>Sound</b></p> <ul style="list-style-type: none"> <li>●Understand how sounds are made</li> <li>●Describe how soundwaves can be seen</li> <li>●Identify the structure of the ear</li> <li>●Describe how sound can be used by animals and humans</li> </ul> | <ul style="list-style-type: none"> <li>●Describe how we see things</li> <li>●Understand reflection, refraction and dispersion</li> <li>●Understand how we see colour</li> </ul> <p><b>Energy transfers</b></p> <ul style="list-style-type: none"> <li>●Understand how to measure temperature changes</li> <li>●Describe conduction, convection and radiation</li> <li>●Describe insulation</li> <li>●Understand how to calculate efficiency and how payments for energy are calculated</li> </ul> <p><b>Earth and space</b></p> <ul style="list-style-type: none"> <li>●Evidence for the heliocentric model of the solar system</li> <li>●Describe how seasons happen</li> <li>●How the Earth has a magnetic field</li> <li>●How gravity varies</li> <li>●Beyond the solar system</li> </ul> | <p><b>Conservation of Energy</b></p> <ul style="list-style-type: none"> <li>●Energy Stores and Transfers</li> <li>●Energy Efficiency</li> <li>●Keeping Warm</li> <li>●Stored Energies</li> <li>●Non-renewable resources</li> <li>●Renewable resources</li> </ul> <p><b>Motion</b></p> <ul style="list-style-type: none"> <li>●Vectors and Scalars</li> <li>●Distance time graphs</li> <li>●Acceleration</li> <li>●Velocity time graphs</li> </ul> | <ul style="list-style-type: none"> <li>●EM waves</li> <li>●EM spectrum</li> <li>●Using long waves</li> <li>●Radiation and temperature</li> <li>●Using short waves</li> <li>●EM dangers</li> </ul> <p><b>Radioactivity</b></p> <ul style="list-style-type: none"> <li>●Atomic models</li> <li>●Inside atoms</li> <li>●Electrons and orbits</li> <li>●Background radiation</li> <li>●Types of radiation</li> <li>●Radioactive decay</li> <li>●Half life</li> <li>●Using radioactivity</li> <li>●Dangers of radioactivity</li> <li>●Radioactivity in medicine</li> <li>●Nuclear energy</li> <li>●Nuclear fission</li> <li>●Nuclear fusion</li> </ul> <p><b>Astronomy</b></p> <ul style="list-style-type: none"> <li>●The solar system</li> <li>●Gravity and orbits</li> <li>●Lifecycle of stars</li> <li>●Red shift</li> <li>●Origins of the universe</li> </ul> <p><b>Energy – Forces Doing Work</b></p> <ul style="list-style-type: none"> <li>●Work and power</li> <li>●Forces and their Effects</li> <li>●Objects affecting each other</li> <li>●Vector diagrams</li> <li>●Rotational forces</li> </ul> <p><b>Static Electricity</b></p> <ul style="list-style-type: none"> <li>●Charges and static electricity</li> </ul> | <ul style="list-style-type: none"> <li>●Electromagnetic induction</li> <li>●The national grid</li> <li>●Transformers and energy</li> </ul> <p><b>Particle Model</b></p> <ul style="list-style-type: none"> <li>●Particles and density</li> <li>●Energy and changes of state</li> <li>●Energy calculations</li> <li>●Gas temperature and pressure</li> <li>●Gas pressure and volume</li> </ul> <p><b>Forces and Matter</b></p> <ul style="list-style-type: none"> <li>●Bending and stretching</li> <li>●Extension and energy transfers</li> <li>●Pressure in fluids</li> <li>●Pressure and upthrust</li> </ul> |
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