

**WORKING SCIENTIFICALLY SKILLS TO RUN THROUGHOUT THE YEAR:**

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

	<b>PRIOR LEARNING</b>	<b>NATIONAL CURRICULUM OBJECTIVES</b>	<b>KEY VOCABULARY</b>
<b>AUTUMN 1</b>	<p><b>Y3 LIGHT</b></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> <li>• recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>• find patterns in the way that the size of shadows change.</li> </ul>	<p><b>Y6 LIGHT</b></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 eyes or from light sources to objects and then to our eyes</li> <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>Y6</b> Straight lines, Light rays.</p> <p><b>Y3</b> light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous</p>
<b>AUTUMN 2</b>	<p><b>Y2 LIVING THINGS AND THEIR HABITATS</b></p> <ul style="list-style-type: none"> <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>Y3 ROCKS</b></p> <ul style="list-style-type: none"> <li>• describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> </ul> <p><b>Y4 LIVING THINGS AND THEIR HABITATS</b></p> <ul style="list-style-type: none"> <li>• recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul>	<p><b>Y6 EVOLUTION AND INHERITANCE</b></p> <ul style="list-style-type: none"> <li>• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <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>	<p><b>Y6</b> offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils</p> <p><b>Y4</b> Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate</p> <p><b>Y3</b> Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil</p>

<p><b>SPRING 1</b></p>	<p><b>Y2 ANIMALS INCLUDING HUMANS</b></p> <ul style="list-style-type: none"> <li>notice that animals, including humans, have offspring which grow into adults</li> </ul> <p><b>Y3 PLANTS</b></p> <ul style="list-style-type: none"> <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>Y5 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>Y5</b></p> <p>Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings</p> <p><b>Y3</b></p> <p>Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal, wind dispersal, animal dispersal, water dispersal</p> <p><b>Y2</b></p> <p>Offspring, Reproduction, Growth, Child, Young/Old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly),</p>
<p><b>SPRING 2 and SUMMER 1</b></p>	<p><b>Y1 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>Y2 USES OF 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>Y4 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> </ul>	<p><b>Y5 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 be separated, including through filtering, sieving and evaporating</li> <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>	<p><b>Y5</b></p> <p>Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve reversible/non-reversible change, burning, rusting, new material</p> <p><b>Y4</b></p> <p>Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle</p> <p><b>Y2</b></p> <p>Names of materials – increased range from year 1</p> <p>Properties of materials - as for year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid</p> <p>Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing. Bend/bending, stretch/stretching</p> <p><b>Y1</b></p> <p>Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff,</p>

	<ul style="list-style-type: none"> <li>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul>		bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through
<b>SUMMER 2</b>	<b>Y4 ELECTRICITY</b> <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>	<b>Y6 ELECTRICITY</b> <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>	<b>Y6</b> Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage  NB Children do not need to understand what voltage is but will use volts and voltage to describe different batteries. The words cells and batteries are now used interchangeably  <b>Y4</b> Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol
<b>ALSO SUMMER 2</b>	<b>Y2 ANIMALS INCLUDING HUMANS</b> <ul style="list-style-type: none"> <li>notice that animals, including humans, have offspring which grow into adults</li> </ul>	<b>Y5 ANIMALS INCLUDING HUMANS</b> <ul style="list-style-type: none"> <li>describe the changes as humans develop to old age</li> </ul> <p><b>From National Curriculum (non-statutory)</b></p> <p>Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty.</p> <p>Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.</p>	<b>This is linked into PSHE curriculum and Sex education.</b>