

## Science Curriculum - End Points

### Record of progression of essential knowledge and vocabulary

Year 1 Essential Knowledge	Year 1 Key Vocabulary	
<p><b><u>Biology - Plants</u></b></p> <ul style="list-style-type: none"> <li>● <b>Identify and name a variety of common wild and garden plants.</b> In our local area, there are a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant.</li> <li>● <b>Identify and describe the basic structure of a variety of common flowering plants, including trees.</b> Plants have common parts, but they vary between the different types of plants, eg flowers and trees.</li> <li>● Some trees keep their leaves all year (<b>evergreen</b>) while other trees drop their leaves during autumn and grow them again during spring (<b>deciduous</b>).</li> </ul>	<p>Leaf</p> <p>flower</p> <p>blossom</p> <p>petal</p> <p>fruit</p> <p>berry</p> <p>root</p> <p>seed</p> <p>trunk</p> <p>branch</p> <p>stem</p> <p>bark</p>	<p>stalk</p> <p>bud</p> <p>deciduous</p> <p>evergreen</p> <p>Names of trees in the local area ???</p> <p>Names of garden and wild flowering plants in the local area ???</p>

<p><b><u>Biology - Animals including Humans</u></b></p> <ul style="list-style-type: none"> <li>• <b>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</b> Each animal type has specific features to help us identify and name them.</li> <li>• Some people have certain animals as pets.</li> <li>• <b>Describe and compare the structure of a variety of common animals (fish, amphibian, reptiles, birds and mammals)</b> Animals vary in many ways having different structures e.g. wings, tails, ears etc.</li> <li>• They also have different skin coverings e.g. scales, feathers, hair.</li> <li>• These key features can be used to identify them.</li> <li>• <b>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</b> Animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals.</li> <li>• <b>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</b> Humans have key parts in common, but these vary from person to person.</li> <li>• Humans (and other animals) find out about the world using their senses.</li> <li>• Humans have five senses - sight, touch, taste, hearing and smelling. These senses are linked to particular parts of the body.</li> </ul>	<p>Head</p> <p>body</p> <p>eyes</p> <p>ears</p> <p>nose</p> <p>mouth</p> <p>tongue</p> <p>teeth</p> <p>fingers</p> <p>skin</p> <p>leg</p> <p>tail</p> <p>wing</p> <p>claw</p> <p>fin</p>	<p>scales</p> <p>feathers</p> <p>fur</p> <p>beak</p> <p>paws</p> <p>hooves</p> <p>touch</p> <p>see</p> <p>smell</p> <p>taste</p> <p>• Names of animals experienced first-hand from each vertebrate group ???</p>

<ul style="list-style-type: none"> <li>We can feel with many parts of our body, not just our fingers</li> </ul>		
<p><b><u>Chemistry - Everyday materials</u></b></p> <ul style="list-style-type: none"> <li><b>Distinguish between an object and the material from which it is made.</b> A table is made from wood, wood can also be used to make other things, eg: chairs, toys bookcase</li> <li><b>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock</b> Some objects can be made from different materials e.g. plastic, metal or wooden spoons.</li> <li>All objects are made of one or more materials.</li> <li><b>Describe the simple physical properties of everyday materials.</b> Materials can be described by their properties e.g. shiny, stretchy, rough etc.</li> <li>Some materials suit certain objects better than others, eg: waterproof materials for an umbrella.</li> <li><b>Compare and group together a variety of everyday materials based on their simple physical properties</b> Different objects can have the same properties</li> </ul>	<p>Object</p> <p>material</p> <p>wood</p> <p>plastic</p> <p>glass</p> <p>metal</p> <p>water</p> <p>rock</p> <p>brick</p> <p>paper</p> <p>fabric</p> <p>elastic</p> <p>foil</p> <p>card/cardboard</p> <p>rubber</p> <p>wool</p>	<p>clay</p> <p>hard</p> <p>soft</p> <p>stretchy</p> <p>stiff</p> <p>bendy</p> <p>floppy</p> <p>waterproof</p> <p>absorbent</p> <p>breaks/tears</p> <p>rough</p> <p>smooth</p> <p>shiny</p> <p>dull</p> <p>see-through</p> <p>not see-through</p>

<p><b><u>Physics - Seasonal changes</u></b></p> <ul style="list-style-type: none"> <li>• <b>Observe changes across the 4 seasons.</b></li> <li>• <b>Observe and describe weather associated with the seasons and how day length varies.</b></li> <li>• There are 4 seasons in a year - Spring, Summer, Autumn and Winter</li> <li>• The weather changes with the seasons.</li> <li>• In the UK, it is usually colder and rainier in winter, and hotter and dryer in the summer.</li> <li>• The change in weather causes many other changes. Some examples are: numbers of minibeasts found outside; seed and plant growth; leaves on trees; and type of clothes worn by people.</li> <li>• In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again.</li> </ul>	<p>Weather (sunny, rainy, windy, snowy etc.)</p> <p>Seasons (winter, summer, spring, autumn)</p> <p>Sun</p> <p>sunrise</p> <p>sunset</p> <p>day length</p>
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<p>Year 2 Essential Knowledge</p>	<p>Year 2 Key Vocabulary</p>
<p><b><u>Biology - Living things and their habitats</u></b></p> <ul style="list-style-type: none"> <li>• <b>Explore and compare the difference between things that are living, dead and things that have never been alive.</b> All objects are either living, dead or have never been alive.</li> <li>• There are 7 life processes for living things</li> <li>• Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts</li> </ul>	<p>Living</p> <p>dead</p> <p>never been alive</p> <p>habitat</p> <p>micro-habitat</p> <p>urban</p> <p>woodland</p> <p>pond</p>

of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers

- An object made of wood is classed as dead.
- Objects made of rock, metal and plastic have never been alive.
- **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.**
- Animals and plants live in a habitat to which they are suited, which means that animals have suitable features that help them move and find food and plants have suitable features that help them to grow well.
- The habitat provides the basic needs of the animals and plants - shelter, food and water.
- Some British habitats are urban, woodland, pond and coastal
- Some world habitats are the ocean, Arctic, tropical rainforest and desert
- **Identify and name a variety of plants and animals in their habitats, including micro-habitats**
- Within a habitat there are different micro-habitats e.g. in a woodland - in the leaf litter, on the bark of trees, on the leaves.
- These micro-habitats have different conditions e.g. light or dark, damp or dry.
- The conditions of a habitat affect which plants and animals live there.
- The plants and animals in a habitat depend on each other for food and shelter etc.

coastal

desert

ocean

Arctic

tropical

suited

suitable

basic needs

food

food chain

shelter

move

feed

producer

consumer

- Names of local habitats e.g. pond, orchard
- Names of micro-habitats e.g. under logs, in bushes etc

<ul style="list-style-type: none"> <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> <li>• The way that animals obtain their food from plants and other animals can be shown in a food chain.</li> </ul>		
<p><b><u>Biology - Plants</u></b></p> <ul style="list-style-type: none"> <li>• Observe and describe how seeds and bulbs grow into mature plants.</li> <li>• Plants may grow from either seeds or bulbs.</li> <li>• These then germinate and grow into seedlings which then continue to grow into mature plants.</li> <li>• These mature plants may have flowers which then develop into seeds, berries, fruits etc.</li> <li>• Find out and describe how plants need water, light and a suitable temperature to grow.</li> <li>• Seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates.</li> <li>• Some plants are better suited to growing in full sun and some grow better in partial or full shade.</li> <li>• Plants also need different amounts of water and space to grow well and stay healthy</li> </ul>	<p><u>As for Year 1:</u></p> <p>Leaf flower blossom petal fruit berry root seed trunk branch stem bark</p>	<p>stalk bud <u>Plus:</u> light shade sun warm cool water grow healthy</p>
<p><b><u>Biology - Animals including humans</u></b></p> <ul style="list-style-type: none"> <li>• Notice that animals, including humans, have offspring which grow into adults.</li> <li>• In humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults.</li> <li>• In other animals, such as chickens or insects, there may be eggs laid that hatch to young or other stages which then grow to adults.</li> </ul>	<p>Offspring reproduction growth child young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise heartbeat breathing</p>	

<ul style="list-style-type: none"> <li>• The young of some animals do not look like their parents e.g. tadpoles.</li> <li>• <b>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</b> (drinking, eating and breathing in order to survive)</li> <li>• <b>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</b></li> <li>• To grow into healthy adults, they also need the right amounts and types of food and exercise.</li> <li>• Good hygiene is also important in preventing infections and illnesses.</li> </ul>	<p>hygiene germs disease</p> <p>food types (examples - meat, fish, vegetables, bread, rice, pasta)</p>
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Year 3 Essential Knowledge	Year 3 Key Vocabulary
<p><b><u>Biology - Plants</u></b></p> <ul style="list-style-type: none"> <li>• <b>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</b></li> <li>• <b>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.</b></li> <li>• <b>Investigate the way in which water is transported within plants</b></li> <li>• Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom.</li> <li>• The roots absorb water and nutrients from the soil and anchor the plant in place.</li> </ul>	<p>Roots stems leaves flowers absorb nutrients Photosynthesis pollen insect/wind pollination seed formation seed dispersal</p>

<ul style="list-style-type: none"> <li>• The stem transports water and nutrients/minerals around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal.</li> <li>• The leaves use sunlight and water to produce the plant's food.</li> <li>• <b>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</b></li> <li>• Some plants produce flowers which enable the plant to reproduce.</li> <li>• Pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination). This forms seeds, sometimes contained in berries or fruits which are then dispersed in different ways.</li> </ul>	wind dispersal animal dispersal water dispersal germination stamen filament ovary anther stigma	
<p><b><u>Biology - Animals inc. humans</u></b></p> <ul style="list-style-type: none"> <li>• <b>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</b> (unlike plants)</li> <li>• Food contains a range of different nutrients - carbohydrates (including sugars), protein, vitamins, minerals, fats, sugars, water - and fibre that are needed by the body to stay healthy.</li> <li>• A piece of food will often provide a range of nutrients.</li> <li>• <b>Identify that humans, and some other animals, have skeletons and muscles for support, protection and movement.</b></li> </ul>	Nutrition nutrients carbohydrates sugars protein vitamins minerals fibre fat water skeleton	bones muscles support protect move skull ribs spine muscles joints
<p><b><u>Chemistry - Rocks</u></b></p> <ul style="list-style-type: none"> <li>• <b>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</b></li> <li>• Rock is a naturally occurring material and can be man-made.</li> <li>• There are different types of rock e.g. sandstone, limestone, slate etc. which have different properties.</li> <li>• Rocks can be hard or soft.</li> <li>• They have different sizes of grain or crystal.</li> <li>• They may absorb water.</li> </ul>	Rock stone pebble boulder crystals layers hard soft	soil fossil marble chalk granite sandstone slate soil



<ul style="list-style-type: none"> <li>• Rocks can be different shapes and sizes (stones, pebbles, boulders).</li> <li>• <b>Recognise that soil is made from rocks and organic matter</b></li> <li>• Soils are made up of pieces of ground down rock which may be mixed with plant and animal material (organic matter).</li> <li>• The type of rock, size of rock pieces and the amount of organic matter affect the property of the soil.</li> <li>• <b>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</b></li> <li>• Some rocks contain fossils. Fossils were formed millions of years ago. When plants and animals died, they fell to the seabed. They became covered and squashed by other material. Over time the dissolving animal and plant matter is replaced by minerals from the water.</li> </ul>	<p>texture absorb water erosion permeable</p>	<p>peat sandy/chalk/clay soil palaeontologist</p>
<p><b>Physics - Lights</b></p> <ul style="list-style-type: none"> <li>• <b>Recognise that they need light in order to see things and that dark is the absence of light</b></li> <li>• We see objects because our eyes can sense light.</li> <li>• Dark is the absence of light and we cannot see anything in complete darkness.</li> <li>• Some objects, for example, the sun, light bulbs and candles are sources of light.</li> <li>• Objects are easier to see if there is more light.</li> <li>• <b>Notice that light is reflected from surfaces</b></li> <li>• Some surfaces reflect light.</li> <li>• Objects are easier to see when there is less light if they are reflective.</li> <li>• <b>Recognise that the light from the sun can be dangerous and that there are ways to protect their eyes</b></li> <li>• The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light.</li> <li>• <b>Recognise that shadows are formed when the light from a light source is blocked by an opaque object</b></li> </ul>	<p>Light light source dark absence of light transparent translucent opaque shiny smooth dull surface shadow reflect reflective mirror sunlight dangerous UV Rays</p>	

<ul style="list-style-type: none"> <li>• Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light.</li> <li>• <b>Find patterns in the way that the size of shadows change</b></li> <li>• The size of the shadow depends on the position of the source, object and surface.</li> </ul>		
<p><b><u>Physics - Forces and Magnets</u></b></p> <ul style="list-style-type: none"> <li>• <b>Compare how things move on different surfaces</b></li> <li>• A force is a push or a pull.</li> <li>• When an object moves on a surface, the texture of the surface and the object affect how it moves. It may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.</li> <li>• <b>Observe how magnets attract or repel each other and attract some materials and not others</b></li> <li>• <b>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</b></li> <li>• A magnet attracts magnetic material.</li> <li>• Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic.</li> <li>• <b>Describe magnets as having two poles</b> - a north pole and a south pole.</li> <li>• The strongest parts of a magnet are the poles.</li> <li>• <b>Predict whether two magnets will repel or attract each other, depending on which poles are facing</b></li> <li>• If two like poles, e.g. two north poles, are brought together they will push away from each other - repel.</li> <li>• If two unlike poles, e.g. a north and south, are brought together they will pull together - attract.</li> <li>• <b>Notice that some forces need contact between two objects, but magnetic forces act as a distance</b></li> </ul>	<p>Force  push  pull  twist  contact force  non-contact force  magnetic force  magnet  strength  bar magnet  ring magnet  force meter</p>	<p>button magnet  horseshoe magnet  attract  repel  magnetic material  metal  iron  steel  poles  north pole  south pole</p>

<ul style="list-style-type: none"> <li>• For some forces to act, there must be contact e.g. a hand opening a door, the wind pushing the trees.</li> <li>• Some forces can act at a distance e.g. magnetism. The magnet does not need to touch the object that it attracts</li> </ul>		
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Year 4 Essential Knowledge	Year 4 Key Vocabulary	
<p><b><u>Biology - Living Things and their habitats</u></b></p> <ul style="list-style-type: none"> <li>• <b>Recognise that living things can be grouped in a variety of ways</b> Living things can be grouped (classified) in different ways according to their features.</li> <li>• Living things have certain characteristics ( MRS NERG)</li> <li>• <b>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</b> Classification keys can be used to identify and name living things.</li> <li>• Living things live in a habitat which provides an environment to which they are suited (Year 2 learning).</li> <li>• <b>Recognise that environments can change and that this can sometimes pose dangers to living things</b></li> <li>• Humans cause the environment to change. This can be in a good way (i.e. positive human impact, such as setting up nature reserves) or in a bad way (i.e. negative human impact, such as littering).</li> </ul>	<p>Classification classification keys environment habitat human impact positive negative migrate hibernate</p>	
<p><b><u>Biology - Animals including humans</u></b></p> <ul style="list-style-type: none"> <li>• <b>Describe the simple functions of the basic parts of the digestive system in humans</b></li> <li>• Food enters the body through the mouth. Digestion starts when the teeth start to break the food down.</li> </ul>	<p>Digestive system digestion mouth teeth saliva</p>	<p>teeth incisor canine molar premolars</p>

<p>Saliva is added and the enzymes in saliva help the breakdown of the food. The food is swallowed and passes down the oesophagus to the stomach. Here the food is broken down further by being churned around and other chemicals are added. The food passes into the small intestine, where nutrients are removed from the food and leave the digestive system to be used elsewhere in the body. The rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body. What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet.</p> <ul style="list-style-type: none"> <li>• <b>Identify the different types of teeth in humans and their simple functions</b></li> <li>• Humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing).</li> <li>• <b>Construct and interpret a variety of food chains, identifying producers, predators and prey.</b></li> <li>• Living things can be classified as producers, predators and prey according to their place in the food chain.</li> </ul>	<p>oesophagus stomach small intestine nutrients large intestine rectum anus</p>	<p>herbivore carnivore omnivore producer predator prey food chain</p>
<p><b><u>Chemistry – States of Matter</u></b></p> <ul style="list-style-type: none"> <li>• <b>Compare and group materials together, according to whether they are solids, liquids or gases</b></li> <li>• A solid keeps its shape and has a fixed volume.</li> <li>• A liquid has a fixed volume but changes in shape to fit the container. A liquid can be poured and keeps a level, horizontal surface.</li> <li>• A gas fills all available space; it has no fixed shape or volume.</li> </ul>	<p>Solid liquid gas state change melting freezing melting point boiling point evaporation</p>	

<ul style="list-style-type: none"> <li>• <b>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</b></li> <li>• Melting is a state change from solid to liquid.</li> <li>• Freezing is a state change from liquid to solid. The freezing point of water is 0 degrees.</li> <li>• Boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid. Water boils when it is heated to 100 degrees. Evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid.</li> <li>• Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.</li> <li>• Condensation is the change back from a gas to a liquid caused by cooling.</li> <li>• <b>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</b></li> <li>• Water at the surface of seas, rivers etc. evaporates into water vapour (a gas). This rises, cools and condenses back into a liquid forming clouds. When too much water has condensed, the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation. This is the water cycle.</li> </ul>	<p>temperature water cycle</p>
<p><b>Physics – Sound</b></p> <ul style="list-style-type: none"> <li>• <b>Identify how sounds are made, associating some of them with something vibrating</b></li> </ul>	<p>Sound source vibrate</p>

<ul style="list-style-type: none"> <li>• <b>Recognise that vibrations from sounds travel through the medium to the ear.</b> A sound produces vibrations which travel through a medium from the source to our ears. Different mediums such as solids, liquids and gases can carry sound.</li> <li>• The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound.</li> <li>• <b>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</b></li> <li>• <b>Recognise that sounds get fainter as the distance from the sound source increases</b></li> <li>• The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source.</li> <li>• <b>Find patterns between the pitch of a sound and features of the object that produced it.</b></li> <li>• Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.</li> </ul>	vibration travel pitch (high, low) volume faint loud insulation	
<p><b><u>Physics - Electricity</u></b></p> <ul style="list-style-type: none"> <li>• <b>Identify common appliances that run on electricity</b></li> <li>• Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries.</li> <li>• <b>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</b></li> <li>• An electrical circuit consists of a cell or battery connected to a component using wires.</li> </ul>	Electricity electrical appliance/device mains plug electrical circuit complete circuit component cell battery positive	loose connection short circuit crocodile clip bulb switch buzzer motor conductor insulator metal

<ul style="list-style-type: none"> <li>• <b>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.</b></li> <li>• If there is a break in the circuit, a loose connection or a short circuit, the component will not work.</li> <li>• <b>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series</b></li> <li>• A switch can be added to the circuit to turn the component on and off.</li> <li>• <b>Recognise some common conductors and insulators, and associate metals with being good conductors</b></li> <li>• Metals are good conductors so they can be used as wires in a circuit.</li> <li>• Non-metallic solids are insulators except for graphite (pencil lead).</li> <li>• Water, if not completely pure, also conducts electricity.</li> </ul>	<p style="text-align: center;">negative connect/connections</p>	<p style="text-align: center;">non-metal symbol</p>
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Year 5 Essential Knowledge	Year 5 Key Vocabulary
<p><b><u>Biology - living things and their habitats</u></b></p> <ul style="list-style-type: none"> <li>• <b>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</b></li> <li>• <b>Describe the life process of reproduction in some plants and animals.</b></li> <li>• As part of their life cycle, plants and animals reproduce.</li> </ul>	<p style="text-align: center;">Life cycle reproduce sexual sperm fertilises egg live young</p>

<ul style="list-style-type: none"> <li>• Most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg.</li> <li>• Animals, including humans, have offspring which grow into adults.</li> <li>• In humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults.</li> <li>• In other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults.</li> <li>• Some young undergo a further change before becoming adults e.g. caterpillars to butterflies. This is called a metamorphosis.</li> <li>• Plants reproduce both sexually and asexually. Bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent.</li> <li>• Sexual reproduction occurs through pollination, usually involving wind or insects.</li> </ul>	metamorphosis asexual plantlets runners bulbs cuttings offspring	
<p><b><u>Biology – Animals including Humans</u></b></p> <ul style="list-style-type: none"> <li>• Describe the change as humans develop to old age.</li> <li>•</li> <li>• When babies are young, they grow rapidly.</li> <li>• They are very dependent on their parents. As they develop, they learn many skills.</li> <li>• At puberty, a child's body changes and develops primary and secondary sexual characteristics. This enables the adult to reproduce. NB: This needs to be taught alongside PSHE.</li> </ul>	human development pregnancy fertilisation gestation uterus umbilical cord	baby toddler child teenager adult puberty



**Chemistry – properties and changes of materials**

- 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.
- Materials have different uses depending on their properties and state (liquid, solid, gas).
- Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.
- Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.
- Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.
- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporation.
- Demonstrate that dissolving, mixing and changes of state are reversible changes.
- 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.
- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.

Thermal/electrical insulator/conductor  
 change of state  
 mixture  
 dissolve  
 solution  
 soluble  
 insoluble  
 filter  
 sieve  
 reversible/non-reversible change  
 burning  
 rusting  
 new material

**Physics - Earth and Space**

- Describe the movement of the Earth and other planets, relative to the Sun in the solar system.
- The Sun is a star. It is at the centre of our solar system.

Earth  
 Sun  
 Moon  
 Mercury

Uranus  
 Neptune  
 spherical  
 solar system

<ul style="list-style-type: none"> <li>• There are 8 planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune).</li> <li>• These travel around the Sun in fixed orbits.</li> <li>• Earth takes <math>365\frac{1}{4}</math> days to complete its orbit around the Sun.</li> <li>• <b>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</b></li> <li>• The Earth rotates (spins) on its axis every 24 hours.</li> <li>• As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night).</li> <li>• <b>Describe the movement of the Moon relative to the Earth.</b></li> <li>• The Moon orbits the Earth. It takes about 28 days to complete its orbit.</li> <li>• <b>Describe the Sun, Earth and Moon as approximately spherical bodies.</b></li> </ul>	<p>Jupiter Saturn Venus Mars</p>	<p>rotates star orbit planets geocentric heliocentric</p>
<p><b><u>Physics - Forces</u></b></p> <ul style="list-style-type: none"> <li>• <b>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</b></li> <li>• A force causes an object to start moving, stop moving, speed up, slow down or change direction.</li> <li>• Gravity is a force that acts at a distance.</li> <li>• Everything is pulled to the Earth by gravity. This causes unsupported objects to fall.</li> <li>• <b>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</b></li> <li>• Air resistance, water resistance and friction are contact forces that act between moving surfaces.</li> </ul>	<p>Force gravity Earth air resistance water resistance friction mechanisms simple machines levers pulleys gears</p>	

<ul style="list-style-type: none"> <li>• The object may be moving through the air or water, or the air and water may be moving over a stationary object.</li> <li>• <b>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</b></li> <li>• A mechanism is a device that allows a small force to be increased to a larger force. The pay back is that it requires a greater movement.</li> <li>• The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover.</li> <li>• Pulleys, levers and gears are all mechanisms, also known as simple machines.</li> </ul>	
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<p style="text-align: center;">Year 6 Essential Knowledge</p>	<p style="text-align: center;">Year 6 Key Vocabulary</p>
<p><b><u>Biology - Living Things and their habitats</u></b></p> <ul style="list-style-type: none"> <li>• <b>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.</b></li> <li>• <b>Give reasons for classifying plants and animals.</b></li> <li>• Living things can be formally grouped according to characteristics.</li> <li>• Plants and animals are two main groups but there are other living things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms.</li> </ul>	<p>Vertebrates invertebrates fish amphibians reptiles birds mammals insects arachnid mollusc crustacean flowering</p>

<ul style="list-style-type: none"> <li>Plants can make their own food whereas animals cannot.</li> <li>Animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates).</li> <li>Vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals. Each group has common characteristics.</li> <li>Invertebrates can be divided into a number of groups, including insects, arachnids, mollusc and crustacean.</li> <li>Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants</li> <li>Carl Linnaeus was the first scientist to create a classification system, and this system has been built upon by modern scientists over the years.</li> </ul>	<p>non-flowering micro-organisms Carl Linnaeus classification characteristics</p>	
<p><b><u>Biology - Animals including Humans</u></b></p> <ul style="list-style-type: none"> <li><b>Identify and name the main parts of the circulatory system, and describe the functions of the heart, blood vessels and blood.</b></li> <li>The heart pumps blood in the blood vessels around to the lungs.</li> <li>Oxygen goes into the blood and carbon dioxide is removed.</li> <li>The blood goes back to the heart and is then pumped around the body.</li> <li>Arteries carry blood away from the heart and veins carry blood back to the heart.</li> <li>As they are used, they produce carbon dioxide and other waste products.</li> <li>Carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system.</li> </ul>	<p>Heart pulse rate pumps blood blood vessels veins arteries transported lungs oxygen carbon dioxide nutrients water</p>	<p>muscles circulatory system diet carbohydrates fats proteins vitamins minerals fibre exercise muscles drugs lifestyle</p>

<ul style="list-style-type: none"> <li>• <b>Describe the ways in which nutrients and water are transported within animals, including humans</b></li> <li>• Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed.</li> <li>• <b>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</b></li> <li>• These things can affect how well our heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly we think, and generally how fit and well we feel.</li> <li>• Some conditions are caused by deficiencies in our diet e.g. lack of vitamins.</li> <li>• Humans need to eat a balanced diet consisting of carbohydrates, proteins, fats, minerals and fibre, and each food group provides our bodies with something it needs.</li> <li>• When exercising, we use our muscles in different ways to help us move our bodies.</li> </ul>		
<p><b><u>Biology - Evolution and Inheritance</u></b></p> <ul style="list-style-type: none"> <li>• <b>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</b></li> <li>• All living things have offspring of the same kind, as features in the offspring are inherited from the parents.</li> <li>• Due to sexual reproduction, the offspring are not identical to their parents and vary from each other.</li> <li>• <b>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</b></li> </ul>		<p>Offspring sexual reproduction vary variations characteristics suited adapted environment inherited species fossils</p>

<ul style="list-style-type: none"> <li>• <b>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</b></li> <li>• Plants and animals have characteristics that make them suited (adapted) to their environment.</li> <li>• If the environment changes rapidly, some variations of a species may not suit the new environment and will die.</li> <li>• If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young.</li> <li>• Over time, these inherited characteristics become more dominant within the population.</li> <li>• Over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. This is evolution.</li> <li>• Fossils give us evidence of what lived on the Earth millions of year ago and provide evidence to support the theory of evolution.</li> <li>• More recently, scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics.</li> </ul>	<p>evolution inheritance inherited Charles Darwin</p>	
<p><b><u>Physics - Light</u></b></p> <ul style="list-style-type: none"> <li>• <b>Recognise that light appears to travel in straight lines</b></li> <li>• <b>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.</b></li> </ul>	<p><u>As for Year 3:</u> light source dark absence of light transparent translucent opaque</p>	<p>surface shadow reflect reflective mirror sunlight dangerous</p>

<ul style="list-style-type: none"><li>• <b>Explain that we see things because light travels from light sources to our eyes or from light source objects and then to our eyes.</b></li><li>• Light appears to travel in straight lines, and we see objects when light from them goes into our eyes.</li><li>• The light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen.</li><li>• Objects that block light (are not fully transparent) will cause shadows.</li><li>• Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.</li></ul>	<p>shiny matt</p>	<p><u>Plus:</u> straight lines light rays</p>
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