



Year Four Science Progression Steps

Year 4	Developing	Expected Standard	Exceeding	Scientific Language
<p><u>Animals, including humans (Biology)</u> Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Identify the different types of teeth in humans and their simple functions.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p>	<ul style="list-style-type: none"> • Pupil understands that animals, including humans, eat food and the digestive system breaks this down to give energy and nutrients • Pupil can name some parts of the digestive system • Pupil understands that there are different types of teeth and recognises some of their functions • Pupil recognises the importance of good oral hygiene to prevent tooth decay • Pupil can create simple food chains which identify predators, prey and producers 	<ul style="list-style-type: none"> • Pupil can explain the process of digestion as the breakdown of food to nutrients required by the body • Pupil can label the main parts of the digestive system and describe the function of each part • Pupil can name the different types of teeth in humans and other animals explaining their function • Pupil recognises that herbivores, omnivores and carnivores have different types of teeth depending on their diet • Pupil can explain how tooth decay occurs and ways to prevent decay • Pupil can create and describe food chains and webs in a wide range of habitats • Pupil identifies producers and consumers at different levels in the food chain/web – primary, secondary, tertiary 	<ul style="list-style-type: none"> • Pupil is aware of some problems which may occur if one part of the digestive system is not working as it should • Pupil can describe the absorption of nutrients by the body at different points in the digestive system • Pupil can compare the different types of teeth in carnivores, omnivores and herbivores describing the number and their position in the jaw • Pupil can design an investigation to replicate the conditions leading to tooth decay and use this to suggest prevention strategies • Pupil can discuss the movement of energy through increasingly complex food chains or food webs • Pupil can identify the apex predator(s) in an Eco-system and the impact of their decline or population explosion upon other animals/plants 	<p>Digestion: digestive system; food; nutrients; mouth; tongue; teeth; oesophagus; stomach; small intestine; large intestine; rectum; anus; mucus; peristalsis; acid; absorption</p> <p>Teeth: carnivore; herbivore; omnivore; tooth; incisor; molar; pre-molar; canine; biting; holding; tearing; grinding; root; gum; jaw bone; tooth decay; plaque; enamel; dentine; pulp</p> <p>Food chains: predator; prey; food chain; producer; consumer; food webs; ecosystem; habitat; apex predator; photosynthesis; decompose; scavenger</p>
<p><u>Electricity (Physics)</u> Identify common appliances that run on electricity.</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>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.</p>	<ul style="list-style-type: none"> • Pupil understands that appliances need electricity to operate and name some common appliances. • Pupil knows that electricity is dangerous and can follow simple rules when using electricity to keep themselves safe. • Pupil can build a simple circuit using a battery, wire and one component. • Pupil understands that a circuit must be complete for current to flow 	<ul style="list-style-type: none"> • Pupil can identify appliances which run on electricity – specifying if this is mains or battery and offering simple reasons for the difference • Pupil understands that electricity is dangerous and how to keep safe when using electricity. • Pupil can construct a simple series circuit with multiple components and name the different parts. • Pupil can include a simple switch in a circuit and explain how it works. • Pupil can devise investigations to classify materials as electrical conductors or insulators. 	<ul style="list-style-type: none"> • Pupils can identify the different amounts of electricity to run a range of appliances e.g. car, TV, kettle • Pupil can discuss the effect of electric shock upon the body, especially the heart • Pupil devises a practical circuit to solve a problem in the class e.g. alarm to protect the teacher's desk. • Pupil can include several switches within a circuit which will operate different components • Pupil can develop circuits incorporating a range of components and switches. The latter 	<p>electricity; electrical appliance/device; mains; plug; electrical circuit; complete circuit; component; cell; battery; positive; negative; connect/connections; short circuit; crocodile clip; switch; bulb; buzzer; motor; conductor; insulator; metal; non-metal; symbol; electrical safety; electrocute; current; voltage; open/closed switch;</p>

<p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors</p>	<ul style="list-style-type: none"> • Pupil understands that most metals are electrical conductors and non-metals electrical insulators. • Pupil attempts to draw a simple circuit diagram with some clearly identified components 	<ul style="list-style-type: none"> • Pupil draws simple diagrams (pictorial representation) to show the sequence of components in the circuit. • Pupil can explain what happens to the brightness of a bulb if more bulbs are placed in the circuit or additional cells added. 	<p>helping them to classify materials as insulators or conductors.</p> <ul style="list-style-type: none"> • Pupil recognises the universally accepted symbols for a range of components and use in their drawings • Pupil is aware of the terms current and voltage from their knowledge of electricity and defines them in simple terms e.g. flow and push of electricity around the circuit 	
<p><u>Living things and their habitats (Biology)</u></p> <p>Recognise that living things can be grouped in a variety of ways</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p>	<ul style="list-style-type: none"> • Pupil can describe the basic differences between the main animal groups • Pupil can use a simple key to identify the main animal groups <p>Pupil can describe some aspects of local environmental change caused by human activity</p> <ul style="list-style-type: none"> • e.g. litter in park • Pupil can give some reasons for how environmental change can affect other living things 	<ul style="list-style-type: none"> • Pupil can name the main animal and plant groups describing their features • Pupil can use a dichotomous key to identify groups of animals and plants • Pupil can create a simple dichotomous key to identify some living things in their local environment • Pupil is aware that man's actions can have an impact upon the lives of other living creatures at a local and global scale e.g. deforestation; global warming; polluting coastlines/ponds or hedges • Pupil can suggest some changes to the actions of man which can address and/or reverse environmental change • Pupil can explain how some plants and animals can adapt to changing environmental conditions 	<ul style="list-style-type: none"> • Pupils can identify animals and plants from a range of habitats by their key features • Pupil can use a variety of identification keys to identify groups of animals and within groups individual species • Pupil can create identification keys to enable a range of different audiences to identify living things in their local, regional or global environment • Pupil can explain with confidence and appropriate vocabulary the impact of man upon global and local environments recognising the cause and effect of man's actions • Pupils can suggest a series of actions which could lead to permanent improvements to environments affected by man's actions • Pupils begin to explore and describe the long term adaptations living things make in response to environmental change which are not reversible 	<p>classification; groups; branching database (dichotomous key); vertebrates; invertebrates; exoskeleton; endoskeleton; mammals; reptiles; amphibians; birds; fish; snails; slugs; worms; spiders; insects; flowering plants; non-flowering plants; environment; eco-system; pollution; damage; deforestation; global warming; floods; litter; desertification; drought; nature reserves; conservation; habitat; camouflage; organism; species; conditions; characteristics; adaptations</p>
<p><u>Sound (Physics)</u></p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p>	<ul style="list-style-type: none"> • Pupil suggests why some sounds are louder than others • Pupil can explain that sound travels by vibrations through a medium. • Pupil understands that sound can vary in pitch and volume • Pupil understands that some materials can insulate sounds 	<ul style="list-style-type: none"> • Pupil can explain that sound becomes fainter the further you move from the sound source. • Pupil can label a simple diagram of the ear to show how a sound is heard. • Pupil can describe how a sound comes from a vibration travelling through a medium e.g. air to the ear, which transmits it to the brain by the auditory nerve for interpretation • Pupil can explain that sound travels at different speeds through different media. • Pupil can describe how to change the pitch of a sound. • Pupil can describe how the volume of a sound can be changed. • Pupil can suggest simple ways to create sound insulators to protect the ear from loud and/or high pitch sounds. 	<ul style="list-style-type: none"> • Pupil can suggest how sounds can be amplified when the distance from the source increases • Pupil can label a detailed diagram of the ear showing the movement of a sound wave from source to auditory nerve • Pupil understands that sound cannot be made/heard in a vacuum such as in space. • Pupil explains how they could investigate the types of sound made by different types of sound maker to demonstrate pitch/volume • Pupil can describe how materials can be sound insulators/conductors and create models to demonstrate their effectiveness. 	<p>Sound; volume; pitch; vibration; medium; conduct; conductor; insulate; insulator; amplify; tuning fork; decibel; high; low; natural; man-made; echo; vacuum; sound waves; sonar; sound proof; outer ear; auditory canal; ear drum; cochlea; auditory nerve; voice box; vocal chords; larynx; tongue; hammer; anvil; stirrup.</p>

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<p>States of Matter (Chemistry) Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>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).</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<ul style="list-style-type: none"> • Pupil can identify solids, liquids and gases in their environment • Pupils are beginning to understand that matter can change state <p>Pupils recognise that water can exist in 3 states</p> <ul style="list-style-type: none"> • – ice (solid); liquid water and water vapour • Pupil can see that evaporation and condensation is happening around them and offer examples • Pupil can describe that the rate of evaporation seen for instance in the size of a puddle can change during the day 	<ul style="list-style-type: none"> • Pupil can define and group a range of materials as solids, liquids and gases • Pupil can explain that materials can change their state and that this is affected by temperature • Pupil can explain the different temperatures at which water changes state and can suggest how this could be investigated/measured • Pupil can describe the process of evaporation and condensation giving examples from the environment around them • Pupil can describe how evaporation and condensation occur within the water cycle • Pupil can explain factors, such as wind, temperature, surface of materials which may be perceived to affect the rate of evaporation and/or condensation • 	<ul style="list-style-type: none"> • Pupils research a range of gases and their properties considering the temperatures when a change of state occur • Pupils can suggest other ways that changes of state may happen e.g. chemical. • Pupils explore the temperatures at which a range of materials change state and compare these to water • Pupil can give example of some changes of state that are irreversible and others which are reversible • Pupil can give detailed account of the Water Cycle noting clearly the changes of state which occur • Pupil can describe the effect on the environment of prolonged periods when either high/low temperatures reduce moisture levels and/or the rate of evaporation/condensation 	<p>matter; solid; liquid; gas; vapour; expand; contract; particles; thermometer; temperature; degrees; Celsius; heating; cooling; freezing; melting; dissolve; soluble; solution; thermometer; energy; change of state; Water Cycle; evaporation; condensation; evaporate; condense; degrees</p>