

Year 4 Science LTP	Topic	Milestones	Key learning	Key vocabulary	Common misconceptions
<b>Autumn 1</b>	Animals, including humans	<ul style="list-style-type: none"> <li>Describe the simple functions of the basic parts of the digestive system in humans.</li> <li>Identify the different types of teeth in humans and their simple functions.</li> <li>Construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul>	<p>Food enters the body through the mouth. Digestion starts when the teeth start to break the food down. Saliva is added and the tongue rolls the food into a ball. 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.</p> <p>The food passes into the small intestine. Here 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> <p>Humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing). Living things can be classified as producers, predators and prey according to their place in the food chain.</p>	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain	<p>Some children may think:</p> <ul style="list-style-type: none"> <li>arrows in a food chains mean 'eats'</li> <li>the death of one of the parts of a food chain or web has no, or limited, consequences on the rest of the chain</li> <li>there is always plenty of food for wild animals</li> <li>your stomach is where your belly button is</li> <li>food is digested only in the stomach</li> <li>when you have a meal, your food goes down one tube and your drink down another</li> <li>the food you eat becomes "poo" and the drink becomes "wee".</li> </ul>
<b>Autumn 2</b>	Living things and their habitats part 1 (classification and environmental change)	<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>Living things can be grouped (classified) in different ways according to their features. Classification keys can be used to identify and name living things.</p> <p>Living things live in a habitat which provides an environment to which they are suited (Year 2 learning).</p> <p>These environments may change naturally e.g. through flooding, fire, earthquakes etc. Humans also 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</p>	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	<p>Some children may think:</p> <ul style="list-style-type: none"> <li>the death of one of the parts of a food chain or web has no or limited consequences on the rest of the chain</li> <li>there is always plenty of food for wild animals</li> <li>animals are only land-living creatures</li> <li>animals and plants can adapt to their</li> </ul>

			as littering). These environments also change with the seasons; different living things can be found in a habitat at different times of the year.		habitats, however they change <ul style="list-style-type: none"> <li>all changes to habitats are negative.</li> </ul>
<b>Spring 1</b>	Animals, including humans part 2 (food chains)				
<b>Spring 2</b>	Sound	<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 the object that produced it.</li> <li>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> <li>Recognise that sounds get fainter as the distance from the sound source increases.</li> </ul>	<p>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, but sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound.</p> <p>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. A sound insulator is a material which blocks sound effectively. 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.</p>	Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	<p>Pitch and volume are frequently confused, as both can be described as high or low. Some children may think:</p> <ul style="list-style-type: none"> <li>sound is only heard by the listener</li> <li>sound only travels in one direction from the source</li> <li>sound can't travel through solids and liquids</li> <li>high sounds are loud and low sounds are quiet.</li> </ul>
<b>Summer 1</b>	States of matter	<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</li> </ul>	<p>A solid keeps its shape and has a fixed volume. 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. A gas fills all available space; it has no fixed shape or volume. Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped.</p> <p>Each individual grain demonstrates the properties of a solid.</p>	solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle	<p>Some children may think:</p> <ul style="list-style-type: none"> <li>'solid' is another word for hard or opaque</li> <li>solids are hard and cannot break or change shape easily and are often in one piece</li> <li>substances made of very small particles like sugar or sand cannot be solids</li> </ul>

		<p>the rate of evaporation with temperature.</p>	<p>Melting is a state change from solid to liquid. Freezing is a state change from liquid to solid. The freezing point of water is 0oC. 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 100oC. 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. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy. Condensation is the change back from a gas to a liquid caused by cooling. 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.</p>		<ul style="list-style-type: none"> <li>• particles in liquids are further apart than in solids and they take up more space</li> <li>• when air is pumped into balloons, they become lighter</li> <li>• water in different forms – steam, water, ice – are all different substances</li> <li>• all liquids boil at the same temperature as water (100 degrees)</li> <li>• melting, as a change of state, is the same as dissolving</li> <li>• steam is visible water vapour (only the condensing water droplets can be seen)</li> <li>• clouds are made of water vapour or steam</li> </ul>
<b>Summer 2</b>	Electricity	<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</li> </ul>	<p>Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. If there is a break in the circuit, a loose connection or a short circuit, the component will not work. A switch can be added to the circuit to turn the component on and off.</p> <p>Metals are good conductors so they can be used as wires in a circuit. Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity.</p>	<p>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</p> <p>N.B. Children in Year 4 do not need to use standard</p>	<p>Some children may think:</p> <ul style="list-style-type: none"> <li>• electricity flows to bulbs, not through them</li> <li>• electricity flows out of both ends of a battery</li> <li>• electricity works by simply coming out of one end of a battery into the component.</li> </ul>

		<p>not a lamp lights in a simple series circuit.</p> <ul style="list-style-type: none"><li>• Recognise some common conductors and insulators, and associate metals with being good conductors.</li></ul>		<p>symbols for electrical components, as this is taught in Year 6.</p>	
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