

# KS2 Science Year B

"It is the glory of God to conceal things, but the glory of kings is to search things out." Proverbs 25:2

## Animals Including Humans: Digestive System

Autumn Term LKS2	Key Knowledge - Encompassed within knowledge mat	Key Vocabulary
<p><b>NC Objectives</b></p> <p>To describe the simple functions of the basic parts of the digestive system in humans.</p> <p>To identify the different types of teeth in humans and their simple functions.</p> <p>To construct and interpret a variety of food chains; identifying producers, predators and prey.</p>	<ul style="list-style-type: none"> <li>• The oesophagus is the food highway that takes your dinner from your mouth down into your stomach so that digestion can begin.</li> <li>• The stomach is filled with powerful acids that break down the food into smaller pieces.</li> <li>• The liver creates different enzymes to help process food nutrients that are collected in the small intestine.</li> <li>• The gallbladder is a storage unit for all of the bile and enzymes created by the liver. It stores them until they are needed for digestion.</li> <li>• The pancreas also makes enzymes to help break down food within the small intestine.</li> <li>• The main job for the small intestine is to absorb nutrients and minerals from food. In fact, 90% of food absorption takes place here.</li> <li>• The large intestine is the final destination for food before it leaves the body as waste. In the large intestine, any water used during digestion is reabsorbed, which causes the leftovers to harden.</li> <li>• The rectum is your food's ticket out of the body as waste.</li> <li>• It takes 7 seconds for food to travel from your mouth to your stomach.</li> <li>• If you stretched out your whole digestive system, it would be 29 feet long.</li> <li>• We all develop two sets of teeth in our lifetime.</li> <li>• Tooth enamel is the strongest thing in your body.</li> <li>• We have four different types of teeth - canines, incisors, pre molars and molars.</li> <li>• Your teeth are like icebergs as a third of your teeth are hidden beneath the gums, which means it's just as important to take care of your gums as the part of your teeth you can see.</li> <li>• Saliva helps us break down enzymes, digest our food and protects our teeth from bacteria.</li> </ul>	<p>nutrition</p> <p>diet</p> <p>pancreas</p> <p>oesophagus</p> <p>intestine</p> <p>organ</p> <p>molars</p> <p>canines</p> <p>incisors</p> <p>salivary gland</p> <p>food chain</p> <p>predators</p> <p>prey</p> <p>producers</p> <p>consumers</p>

# States of Matter

Autumn Term LKS2	Key Knowledge - Encompassed within knowledge mat	Key Vocabulary
<p><b>NC Objectives</b></p> <p>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.</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>Pupils will also observe water as a solid, a liquid and a gas and will note the changes to water when it is heated or cooled.</p> <p>They will explore the effect of temperature on substances such as chocolate, butter and cream.</p> <p>They will observe and record evaporation over a period of time.</p>	<ul style="list-style-type: none"> <li>• Matter is everything we come across in our lives, like the air we breathe, the clothes we wear, cool drinks, literally everything!</li> <li>• All living things are matter. Also, non-living things and man-made objects are matter.</li> <li>• We are made of matter.</li> <li>• The three main states of matter are solids, liquids and gases.</li> <li>• Atoms are tiny, tiny particles or building blocks which make up substance.</li> <li>• Molecules are made up of two or more atoms.</li> <li>• Atoms when put together form molecules, which form cells, which form our organs and our populations and our planets and the galaxies and so on.</li> <li>• Solids are objects that keep their own shape and do not flow in a given temperature.</li> <li>• Ice is a solid but when it melts it becomes a liquid.</li> <li>• Solids are made up of molecules which group together and don't move around.</li> <li>• Solids can be different colours and textures, and they can be turned into different shapes.</li> <li>• The liquid state of matter is the phase between solid and gas.</li> <li>• Liquids do not have their own shape but can take the shape of the container they are in and they can flow at a given temperature.</li> <li>• Liquids can be different colours and thickness.</li> <li>• Liquids are made up of molecules which are further apart than in solids and can move around easily.</li> <li>• Gases are air-like substances that can move around freely or flow to fit a container and they don't have their own shape.</li> <li>• You can put your hand through gases and you won't feel them.</li> <li>• Gases if they get out their container they can spread easily.</li> <li>• We are surrounded by different gases in the air we breathe.</li> <li>• The molecules of a gas are spaced apart and jiggle around.</li> </ul>	<p>thermometer</p> <p>melting point</p> <p>freezing point</p> <p>boiling point</p> <p>solid</p> <p>liquid</p> <p>gas</p> <p>evaporation</p> <p>Particles</p> <p>condensation</p> <p>water vapour</p> <p>substance</p>

# Sound

Spring Term LKS2	Key Knowledge - Encompassed within knowledge mat	Key Vocabulary
<p><b>NC Objectives</b></p> <p>Identify how sounds are made, associating some of them with something vibrating.</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> <p>Pupils will also explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.</p> <p>Work scientifically by; finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses.</p>	<ul style="list-style-type: none"> <li>• Sound cannot travel through space since there are no molecules to travel through.</li> <li>• On earth, we have air molecules that vibrate in and around our ears.</li> <li>• The cry of a human baby is about 115 decibels.</li> <li>• The loudest natural sound on earth is caused by an erupting volcano.</li> <li>• Flies cannot hear any kind of sound. Not even their own buzzing.</li> <li>• Particles are closer together in water than air so sound can travel four time faster in water.</li> <li>• Sound travels at a speed of around 767 miles per hour.</li> <li>• Sound comes from vibrations. These vibrations create sound waves which move through mediums such as water and air before reaching our ears.</li> <li>• Sound is used by many animals to detect danger, warning them of possible attacks before they happen.</li> <li>• The loud noise you create by cracking a whip occurs because the tip is moving so fast it breaks the speed of sound.</li> <li>• Dogs can hear at a higher frequency as compared to humans.</li> <li>• Animals that have large ears can hear better as compared to animals with small ears.</li> <li>• Wind has no sound. A sound is only created when wind blows against an obstacle.</li> <li>• We measure the loudness of sound on a scale called decibels.</li> <li>• Loud sounds that are greater than 85 decibels can damage your hearing.</li> <li>• Aeroplanes taking off has sound in the range of 80 -90 decibels.</li> <li>• Sound can travel through materials.</li> <li>• The hammer, anvil and stirrup are the three smallest bones in our ears responsible for sound transmission. Together they are about the size of a pea!</li> </ul>	<p>vibration</p> <p>medium</p> <p>source</p> <p>energy</p> <p>materials</p> <p>reflect</p> <p>volume</p> <p>decibels</p> <p>pitch</p> <p>instruments</p> <p>particles</p> <p>sound source</p>

# Electricity

Spring Term LKS2	Key Knowledge - Encompassed within knowledge mat	Key Vocabulary
<p><b>NC Objectives</b></p> <p>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> <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> <p>Pupils will also construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices.</p> <p>Pupils will work scientifically by observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.</p>	<ul style="list-style-type: none"> <li>• Electricity comes from power stations, wind, the sun, water and even animal poo.</li> <li>• Electricity is a type of energy that can build up in one place to flow to another.</li> <li>• A power station is a place where electricity is created and sent to our homes.</li> <li>• Electricity travels at the speed of light, which is more than 186,000 miles per hour.</li> <li>• One flash of lightening could power 1000 houses for a whole year.</li> <li>• Electricity comes from the power plant through underground or overhead lines to your home. It enters your home through a service box that keeps track of how much electricity you use. When you plug an appliance into an outlet in the wall, electricity flows into the appliance to make it work.</li> <li>• Electricity is very dangerous. It has the power to kill you.</li> <li>• A switch is an electrical component that can make or break an electrical circuit.</li> <li>• A battery is a device that stores chemical energy and makes it available in an electrical form.</li> <li>• A conductor is an object or type of material that allows the flow of an electrical current in one or more directions.</li> <li>• An insulator is a material which does not easily allow heat and/or electricity to pass through it.</li> <li>• Plastic, wood, rubber and glass are examples of good insulators.</li> <li>• Metal conducts electricity.</li> </ul>	<p>electricity</p> <p>batteries</p> <p>circuit</p> <p>voltage</p> <p>current</p> <p>bulb</p> <p>conductor</p> <p>insulator</p> <p>switch</p> <p>control</p> <p>wind turbines</p> <p>hydropower</p>

# Light and Dark

Summer Term LKS2	Key Knowledge - Encompassed within knowledge mat	Key Vocabulary
<p><b>NC Objectives</b></p> <p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p> <p>Find patterns in the way that the size of shadows change.</p> <p>Pupils will also explore what happens when light reflects off a mirror or other reflective surfaces.</p> <p>They will look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.</p> <p>Pupils will work scientifically by, looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.</p>	<ul style="list-style-type: none"> <li>• Black and dark objects absorb light and heat whilst white or light objects reflects it.</li> <li>• Some objects like glass are transparent which means that light can shine through them.</li> <li>• Our main source of light on Earth comes from the Sun.</li> <li>• Darkness is made by blocking light from the Sun or some other source of light, which makes shadows.</li> <li>• The Sun and other stars, fires, torches and lamps all make their own light and so are examples of sources of light.</li> <li>• A mirror is not a source of light, it merely reflects light.</li> <li>• The Moon is not a source of light, it reflects the light from the Sun.</li> <li>• Some animals are nocturnal. They wake at night and can see very well in the dark.</li> <li>• Our eyes aren't designed to see in the dark.</li> <li>• Reflection occurs when a ray of light hits a surface and bounces off.</li> <li>• The main light source for Earth is the Sun.</li> <li>• Opaque objects do not allow light to pass through them.</li> <li>• Convex lenses are lenses that curve outward from the edges to the centre.</li> <li>• Concave lens is one where the centre of the lens is thinner than the edges.</li> </ul>	<p>natural</p> <p>artificial</p> <p>reflect</p> <p>light</p> <p>source</p> <p>ultraviolet rays (UV)</p> <p>sunburn</p> <p>vitamin D</p> <p>protection</p> <p>exposure</p> <p>reflective</p> <p>surface</p> <p>materials</p> <p>fluorescent</p> <p>shadow</p> <p>ray</p> <p>block</p> <p>opaque</p> <p>cast</p>