

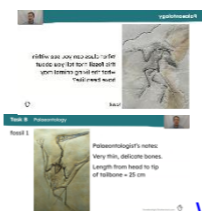
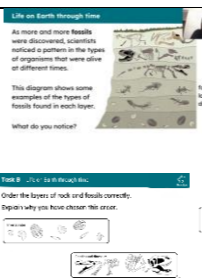
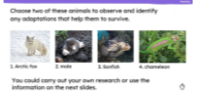




Year	Knowledge				Skills
Y5 / Y6  Term 1  Year B	<p><u>Focus:</u> How can forces keep us safe?</p> <p><u>National Curriculum Knowledge</u>                      ✓ Forces and friction</p> <p><u>Prior Learning:</u> Can you feel the force LKS2</p>				<p><b>Knowledge Skills and Understanding</b></p> <ul style="list-style-type: none"> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity</li> <li>Gravity is a force acting between the Earth and the falling object</li> <li>Identify the effects of air resistance</li> <li>Identify the effects of water resistance</li> <li>Identify the effects of friction between moving surfaces</li> <li>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</li> </ul> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>Know that changing only one variable is the only way to make a fair test.</li> <li>Carry out tests to answer questions</li> <li>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Observe and measure carefully</li> <li>Gather and record results in different ways</li> <li>Use their observations and ideas to suggest answers to questions.</li> </ul> <p><b>Performing simple tests</b></p> <ul style="list-style-type: none"> <li>Do heavy objects fall faster than light objects?</li> <li>What surface creates more friction?</li> <li>Does the area of the parachute canopy affect air resistance?</li> <li>How does the position of the pivot change the effort needed to lift a load?</li> <li>How do pulleys help us?</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Task B Investigating pulleys</b></p> <p>Explore how pulleys can make it easier to lift a load.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>1. Lifting without a pulley</p>  <p>Hook the force meter onto the bottle.</p> <p>Lift the bottle off the ground.</p> <p>Read the value on the force meter.</p> </div> <div style="text-align: center;"> <p>2. Lifting with a pulley</p>  <p>Set up the equipment as shown in the photograph.</p> <p>Lift the bottle off the ground.</p> <p>Read the value on the force meter.</p> </div> </div> </div>
	Objective	Sticky Knowledge	Key Vocabulary and Definitions	Resources	
	Introduction to Gravity	Gravity is an invisible pulling force that makes unsupported objects fall towards Earth. Forces can make objects move, slow down, change direction or change shape Objects of the same size fall at the same rate	<b>Gravity</b> - Gravity is the force that attracts objects to Earth  <b>Force</b> - A force is a push or a pull..	Blob of paint on paper – which way does it run? Two identical bottles with water in drop at same time – what happens	
	Pushes and pulls measure pushes and pulls using a force meter.	Different types of forces can be contact or non-contact forces.  Forces can change an object's speed, direction, and/or shape. Forces are measured in newtons (N), named after Sir Isaac Newton.(Scientist born in 1643)	<b>Force meter</b> - A force meter is a piece of equipment used to measure the size of a force. It is also called a newton meter. <b>contact force</b> - pushing open a door with your hand <b>non-contact force</b> - pulling a paperclip with a magnet	A range of force meters – lifting simple objects	
	Plan and carry out an investigation to measure the effects of friction.	Friction is the force between two surfaces that are moving, or trying to move, across each other. Friction always works in the opposite direction to the moving object. Only changing one variable allows us to know that no other variable has affected the results of the test. Rough surfaces tend to create more friction than smooth surfaces.	<b>Friction</b> - Friction is a type of force that acts between surfaces.  <b>Variables</b> - Variables are factors that can be changed in an investigation.	<b>Common misconception</b> <b>Friction is always unhelpful.</b> Ramp with different surfaces at the bottom – measure how far the car goes	
	Air resistance - investigation	Air resistance is a force caused by air moving against the surface of an object Air resistance is a force that acts in the opposite direction to a moving object Air resistance can be helpful and unhelpful in different real-life situations	<b>Air resistance</b> - Air resistance is a type of friction force which acts between the air and the surface of an object.	Run across playground – next with a friend holding large sheet of fabric – discuss Parachutes rely on pushing against the canopy to slow the falling person down. Does the area of the parachute canopy affect air resistance? Different sized paper cake cases	
	How levers can help us	A lever is a simple mechanism or machine which is useful for lifting things. A lever allows a smaller force to have a greater effect. The object you are lifting is called the load. The force you apply to the load to make an object move is called the effort. A lever requires different amounts of force depending on where the pivot is positioned.	<b>Lever</b> - A lever is a simple mechanism or machine which is useful for lifting things. <b>Load</b> - The load is the object you are lifting with a lever. <b>Effort</b> - The effort is the force needed to do a job. <b>Pivot</b> - The pivot is the fixed point where a lever turns.	Pick up friend – discuss seesaw Example of leavers – ring pull, nail clipper, wheel barrow Rubber, pencil, ruler – make a simple lever and label. Move the pivot and discuss how this changes the effort needed	
	How pulleys can help us I can describe how pulleys can make difficult work easier.	A pulley is a simple mechanism or machine, used in everyday life, which is useful for lifting things. A pulley often consists of a wheel with a groove, through which a string or rope runs. Some pulleys make it easier because they change the direction of the force needed to lift an object	<b>Pulley</b> - A pulley is a simple mechanism or machine which is useful for lifting things.	Look at window blind with pulley – discuss. Investigate lifting milk bottle – next with a pulley - use a force meter to measure to compare	

Year	Knowledge		Skills	
Y 5 / Y 6  Term 2  Year B	<p><b>Focus:</b> Why aren't there dinosaurs in Stroud?</p> <p><b>National Curriculum Knowledge</b>                      ✓ Evolution and inheritance</p> <p><b>Prior Learning:</b> Classification UKS2 Rocks LKS2</p>		<p><b>Knowledge Skills and Understanding</b></p> <ul style="list-style-type: none"> <li>Explain that living things have changed over time</li> <li>Know that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>To know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>To know that animals and plants are adapted to suit their environment in different ways</li> <li>that adaptation may lead to evolution</li> <li>evolution happens over a very long time</li> <li>To know how life on earth started - we know that life on Earth started at least 3.8 billion years ago by this time, the young planet had cooled and formed a rocky crust                             <ul style="list-style-type: none"> <li>some scientists believe life began in a rock pool or in the ocean</li> <li>others think it may have arrived from space with comets and asteroids</li> </ul> </li> <li>To know how fossils are formed - a dinosaur dies and is buried before the remains are completely destroyed - over time, layers of sediment build up and press down on the buried remains - dissolved minerals, transported by ground-waters in the sediment, fill tiny spaces in the bones</li> </ul>	
	Objective	Sticky Knowledge	Key Vocabulary and Definitions	Resources
	To describe what fossils can tell us about things that lived in the past	<p><b>Fossils are our best form of evidence about Earth's history, including the history of life</b></p> <p>Fossils can give us clues about living things that inhabited the Earth millions of years ago</p> <p>By studying the fossil record, we can tell how long life has existed on Earth</p> <p>Palaeontologists use the fossils they find to propose theories about living things from the past</p> <p>Theories about prehistoric living things change over time as we gather more evidence</p>	<p><b>Evidence</b> - Evidence is information that helps us to prove if something is true or not true.</p> <p><b>Fossil record</b> - The fossil record is the collective name for all of the fossil evidence gathered by scientists.</p> <p><b>Theory</b> - A theory is a carefully thought-out explanation for something about our world that is based on learning from scientific enquiry.</p>	<p>How do we know about dinosaurs if there were no humans alive?</p>  <p><a href="#">What can fossils tell us? - BBC Bitesize</a></p>
	To use fossil evidence to describe how living things have changed over time	<p><b>By looking at different layers of rock, geologists can learn about what was happening on Earth at different times</b></p> <p>Where a fossil is found can tell us about which animals or plants lived in each time period in the history of our Earth</p> <p>Fossils of the simplest organisms are found in the oldest rocks, and more complex organisms in the newest rocks</p>	<p><b>Sedimentary rock</b> - Sedimentary rock is formed when sediment collects at the bottom of a lake or sea.</p> <p><b>Geologist</b> - A geologist is a scientist who studies what Earth is made of.</p> <p><b>Evidence</b> - Evidence is information which helps us to prove that something is true or not true.</p>	<p><b>Life on Earth through time</b></p>  <p><a href="#">What is inheritance? - BBC Bitesize</a></p>
	To describe how offspring of different animals are similar but not identical to their parents	<p><b>Living things produce offspring of the same kind.</b></p> <p>Offspring share some characteristics of their parents.</p> <p>Normally offspring vary and are not identical to their parents.</p>	<p><b>Vary</b> - To vary is to differ or change.</p> <p><b>Identical</b> - Things that are identical are exactly the same as each other.</p> <p><b>Variation</b> - A variation is a difference between two or more things.</p>	<p><a href="#">What is inheritance? - BBC Bitesize</a></p>
	To identify inherited and environmental characteristics of different offspring	<p><b>Inherited characteristics are passed from one generation to another.</b></p> <p><b>Inherited characteristics include eye colour, height, skin colour, hair colour etc.</b></p> <p><b>Environmental characteristics are ones which are not passed down from parent to child.</b></p>	<p><b>Generation</b> - A generation in a family is all of the people born and living around the same time.</p> <p><b>Characteristic</b> - A characteristic is a feature or property of something that we can use to help identify it.</p> <p><b>Inheritance</b> - Inheritance is the process of passing on physical features from parent to offspring when they reproduce.</p> <p><b>Inherited</b> - Something which is inherited has been received from an ancestor.</p> <p><b>Environmental</b> - An environmental characteristic is one which has been learned or acquired during an organism's lifetime.</p>	<p>Inherited characteristics, height, eye, hair skin colour, face shape and features, blood type.</p> <p>Environmental characteristics are not passed down through generations</p>
	To describe some adaptations in a range of animals	<p><b>Animals have special features, or adaptations, that help them to survive in their habitats.</b></p> <p>Adaptations are passed from one generation of a species to another.</p> <p>Many different animals have adaptations that protect them from predators.</p>	<p><b>Adaptation</b> - An adaptation is a feature of a plant or animal that helps them to survive in their habitat.</p>	<p>Different animals have different adaptations depending on their habitat.</p> <p><a href="#">What is adaptation? - BBC Bitesize</a></p> 
	Research a living thing that has evolved over time	<p><b>Evolution is the process by which living things can gradually change over time.</b></p> <p>The huge variety of living things in the world today is the result of evolution over time. The theory of evolution has been proven through evidence from fossils as well as living animals and plants. The evolution of living things can be researched using secondary sources of information.</p>	<p><b>Evolution</b> - Evolution is the process by which living things change over time.</p>	<p><a href="#">What is evolution? - BBC Bitesize</a></p> <p>Darwin's finches</p> <p>Diversity in plants is a result of evolution over time</p>

- Working Scientifically**
- Observing and raising questions - how is a badger adapted to its environment? - how is an owl adapted to its environment?
  - Contrasting and comparing - how can animals and plants survive in extreme conditions?
  - Identifying scientific evidence that has been used to support or refute ideas or arguments
  - how did the work of Mary Anning, Charles Darwin and Alfred Wallace develop our understanding of how animals have changed over time? What arguments have been made against what they believed?
  - Use their observations and ideas to suggest answers to questions.

Year	Knowledge				Skills
<p>Y5/Y6</p> <p>Term 3</p> <p>Year B</p>	<p><u>Focus:</u> Which bits of my body could I live without?</p> <p><u>National Curriculum Knowledge</u></p> <p>✓ Animals including humans – Circulatory System</p> <p><u>Prior Learning:</u> What if I had animal teeth? LKS2 Do all species start as an egg? UKS2</p>				<p><b>Knowledge Skills and Understanding</b></p> <ul style="list-style-type: none"> <li>To be able to identify and name the main parts of the human circulatory system</li> <li>describe the functions of the heart, blood vessels and blood</li> <li>To know what the pulse is</li> <li>To recognise the impact of exercise and lifestyle on the way their bodies function</li> <li>To know why a healthy diet and exercise are important</li> <li>To know how the skeleton and muscles help the body to move</li> <li>the skeleton bends at the joints, for example, the knees muscles are attached to bones by the tendons when muscles contract the bones move, fill tiny spaces in the bones</li> </ul> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>Plan fair test investigations into heart rate, controlling variables such as type of exercise, duration and rest time between tests</li> <li>Plan research into the impact of diet, exercise and lifestyle choices on the circulatory system</li> <li>Ask questions about how the heart works, why heart rate changes, how nutrients travel through the body, and which lifestyle choices support circulatory health</li> <li>Observe and feel the heart beating using stethoscopes</li> <li>Measure heart rate before, during and after different exercises using stopwatches, taking multiple readings for accuracy and recording in tables</li> <li>Create labelled diagrams of the circulatory system and the journey of nutrients from digestive system to body parts</li> <li>Record research findings about diet, exercise and lifestyle impacts in tables and charts</li> <li>Conclude that heart rate increases during exercise because muscles need more oxygen, and that the circulatory system transports oxygen, nutrients and water throughout the body</li> <li>Predict which exercises will increase heart rate the most and identify patterns between exercise intensity and heart rate</li> <li>Use research evidence to explain how diet, exercise and lifestyle choices affect circulatory health</li> <li>Present findings through heart-healthy diet plans, exercise recommendations and public health campaigns using scientific vocabulary and diagrams</li> <li>Explain the functions of the circulatory system using scientific vocabulary and diagrams</li> </ul>
	<p><u>Objective</u></p>	<p><u>Sticky Knowledge</u></p>	<p><u>Key Vocabulary and Definitions</u></p>	<p><u>Resources</u></p>	
	<p><b>The human circulatory system</b></p>	<p>The circulatory system is made up of the heart, blood vessels and blood. The heart pumps blood around the body through blood vessels. Blood carries oxygen, nutrients and water to all parts of the body and removes waste products like carbon dioxide.</p>	<p><b>Circulatory system:</b> The system of organs and vessels that moves blood around the body, delivering oxygen and nutrients to cells and removing waste products.</p>	<p>Diagrams of the human body and heart, models of the heart (if available), stethoscopes, video clips showing the heart beating, red and blue string/wool to represent arteries and veins</p> <p>(Sports scientists need to understand how the circulatory system works to help athletes perform at their best. Explore how your heart pumps blood around your body and identify the key parts of this amazing delivery system!)</p>	
	<p><b>How the heart works</b></p>	<p>The heart is a muscular pump that beats continuously to push blood around the body. When we exercise, our muscles need more oxygen and nutrients, so the heart beats faster to pump blood more quickly around the body.</p>	<p><b>Heart rate:</b> The number of times the heart beats per minute, which increases during exercise to deliver more oxygen to working muscles.</p>	<p>Stopwatches/timers, space for exercise activities (star jumps, running on spot), recording sheets, graph paper or tablets for creating graphs, stethoscopes</p> <p>(Personal trainers monitor heart rate to design effective exercise programmes. Investigate how different types of exercise affect your heart rate and present your findings like a sports scientist!)</p>	
	<p><b>Blood vessels and transporting nutrients</b></p>	<p>Blood vessels are tubes that carry blood around the body to deliver oxygen and nutrients to cells. Nutrients from digested food and water are absorbed into the blood and transported to all parts of the body where they are needed.</p>	<p><b>Blood vessels:</b> The tubes that carry blood around the body.</p>	<p>Diagrams of blood vessels, red and blue wool/string, clear tubing and coloured water for demonstrations, diagrams showing digestive system linked to circulatory system</p> <p>(Nutritionists need to understand how nutrients travel through the body. Map the journey of nutrients from your breakfast through your digestive system and into your blood to reach your muscles and organs!)</p>	
	<p><b>Impact of diet and exercise on the body</b></p>	<p>A balanced diet and regular exercise keep the circulatory system healthy. Exercise strengthens the heart muscle and helps blood vessels work efficiently. A diet high in fat and sugar can damage blood vessels and make the heart work harder. Eating fruits, vegetables and drinking water supports a healthy circulatory system.</p>	<p><b>Transport:</b> The process of carrying oxygen, nutrients and water through the blood to all parts of the body and removing waste products like carbon dioxide.</p>	<p>Food group cards/pictures, examples of balanced and unbalanced meals, research materials about heart-healthy foods, posters/presentation materials, heart disease information (age-appropriate)</p> <p>(Health coaches design diet and exercise plans to keep people's hearts healthy. Research which foods support a healthy circulatory system and create a heart-healthy meal plan with exercise recommendations!)</p>	
	<p><b>Impact of drugs and lifestyle choices</b></p>	<p><b>Lifestyle choices:</b> The decisions people make about how they live, including diet, exercise, sleep, and whether to use harmful substances, which affect how well their body functions.</p>	<p>Information sheets about effects of smoking, alcohol and medicines (age-appropriate), case studies, images showing healthy vs damaged blood vessels/lungs, materials for creating posters or presentations about healthy choices</p> <p>(Public health campaigns educate people about lifestyle choices. Research how smoking, alcohol and other factors affect the circulatory system. Create a campaign to promote heart-healthy lifestyle choices for your community!)</p>		

Year	Knowledge	Skills																												
Y 5 / Y 6  Term 3  Year B	<p><b>Focus:</b> Which bits of my body could I live without?</p> <p><b>National Curriculum Knowledge</b>                      ✓ Animals including Humans - Circulation</p> <p><b>Prior Learning:</b> What if I had animal teeth? LKS2 Do all species start as an egg? UKS2</p>	<p><b>Knowledge Skills and Understanding</b></p> <ul style="list-style-type: none"> <li>To be able to identify and name the main parts of the human circulatory system</li> <li>describe the functions of the heart, blood vessels and blood</li> <li>To know what the pulse is</li> <li>To recognise the impact of exercise and lifestyle on the way their bodies function</li> <li>To know why a healthy diet and exercise are important</li> <li>To know how the skeleton and muscles help the body to move</li> <li>the skeleton bends at the joints, for example, the knees muscles are attached to bones by the tendons when muscles contract the bones move, fill tiny spaces in the bones</li> </ul>																												
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #f4a460;">Objective</th> <th style="background-color: #f4a460;">Sticky Knowledge</th> <th style="background-color: #f4a460;">Key Vocabulary and Definitions</th> <th style="background-color: #f4a460;">Resources</th> </tr> </thead> <tbody> <tr> <td>Describe what the human heart is and what it does.</td> <td> <p>The heart is a hollow, muscular organ located behind the breastbone and slightly to the left of your chest.</p> <p>The function of the heart is to pump blood to all parts of your body.</p> <p>Your heart will beat around 115,000 times each day.</p> </td> <td> <p><b>Organ</b> - An organ is a part of the body that does a particular job, such as the brain, heart and lungs.</p> <p><b>Function</b> - The function of an organ is its job within the body.</p> <p><b>Heart</b> - The heart is an organ that pumps blood around the body.</p> </td> <td> <p><a href="#">The circulatory system - BBC Bitesize</a></p> </td> </tr> <tr> <td>Describe what blood is and what it does.</td> <td> <p>Blood is needed by humans to keep them alive.</p> <p>Blood transports oxygen and nutrients to all the parts of the body so they can keep working.</p> <p>Blood transports carbon dioxide and other waste materials to be removed from the body.</p> <p>Blood is made of different parts. Each part has a special function within blood.</p> </td> <td> <p><b>nutrients</b> - Nutrients are important substances that living things use to stay alive and healthy.</p> <p><b>Oxygen</b> - Oxygen is a gas in the air that is vital for living things.</p> <p><b>Carbon dioxide</b> - Carbon dioxide is the gas in the air.</p> </td> <td> <p><a href="#">Lesson: Function of blood   KS2 Science   Oak National Academy (thenational.academy)</a></p> </td> </tr> <tr> <td>Describe what blood vessels are and what they do</td> <td> <p>Blood vessels transport blood all around the body, to and from your heart.</p> <p>Arteries are blood vessels. Most arteries deliver blood rich in oxygen to all the parts of the body.</p> <p>Veins are blood vessels. Most veins return blood low in oxygen to the heart.</p> <p>Blood is always red. Blood travelling through veins may appear blue because of how light travels through our skin.</p> </td> <td> <p><b>Blood vessels</b> - Blood vessels are tubes through which blood flows around the body.</p> <p><b>Arteries</b> - Arteries are blood vessels that carry blood away from the heart.</p> <p><b>Veins</b> - Veins are blood vessels that carry blood back to the heart.</p> <p><b>Oxygenated</b> - Oxygenated blood is blood rich in oxygen.</p> <p><b>Deoxygenated</b> - Deoxygenated blood is blood low in oxygen.</p> </td> <td></td> </tr> <tr> <td>Describe how water and nutrients from food travel through the body.</td> <td> <p>Nutrients have different purposes and come from different foods.</p> <p>A healthy diet is essential for maintaining the nutrients our body needs to function properly.</p> <p>During digestion, your small intestine absorbs the nutrients from your food and passes them into the bloodstream.</p> <p>Water and nutrients from food are transported in blood around the body to where they are needed.</p> </td> <td> <p><b>Nutrients</b> - Nutrients are important substances that living things use to stay alive and healthy.</p> <p><b>Digest</b> - When we digest food it is broken down so that nutrients can be used by the body.</p> <p><b>Intestine</b> - The intestine is a long tube that is split into the small and large intestine, through which food travels from the stomach and out of the body while it is being digested.</p> <p><b>Bloodstream</b> - Bloodstream is the flow or movement of blood throughout the body.</p> </td> <td></td> </tr> <tr> <td>What effect does exercise have on muscles?</td> <td> <p>Describe how muscles enable movement</p> <p>Describe what happens to muscles during exercise</p> <p>Describe how muscles can change over time due to exercise</p> </td> <td> <p><b>Muscles</b> - muscles always work in pairs – they are connected to the bones and when one contracts it moves the bone it is connected to.</p> <p><b>Muscle pairs</b> – when 1 muscle contracts the opposite muscle relaxes</p> <p><b>Contract</b>- when a muscle contracts it gets shorter and fatter</p> <p><b>Relaxed muscles</b> – muscle gets longer and thinner</p> <p><b>Fibres</b> – muscles are made up of fibres</p> </td> <td> <p><a href="#">How do your muscles work? - BBC Bitesize</a></p> </td> </tr> <tr> <td>What happens to the circulatory system during exercise?</td> <td> <p>Describe the changes that will occur during exercise</p> <p>Describe how an athlete's body will respond differently to exercise</p> </td> <td> <p><b>Pulse</b> -</p> <p><b>Resting heart rate</b> – how many times your heart beats when you are sitting still.</p> </td> <td> <p>Complete table showing at rest heart rate + after exercise. What do you think would be different in an athlete? Why?</p> </td> </tr> </tbody> </table>	Objective	Sticky Knowledge	Key Vocabulary and Definitions	Resources	Describe what the human heart is and what it does.	<p>The heart is a hollow, muscular organ located behind the breastbone and slightly to the left of your chest.</p> <p>The function of the heart is to pump blood to all parts of your body.</p> <p>Your heart will beat around 115,000 times each day.</p>	<p><b>Organ</b> - An organ is a part of the body that does a particular job, such as the brain, heart and lungs.</p> <p><b>Function</b> - The function of an organ is its job within the body.</p> <p><b>Heart</b> - The heart is an organ that pumps blood around the body.</p>	<p><a href="#">The circulatory system - BBC Bitesize</a></p>	Describe what blood is and what it does.	<p>Blood is needed by humans to keep them alive.</p> <p>Blood transports oxygen and nutrients to all the parts of the body so they can keep working.</p> <p>Blood transports carbon dioxide and other waste materials to be removed from the body.</p> <p>Blood is made of different parts. Each part has a special function within blood.</p>	<p><b>nutrients</b> - Nutrients are important substances that living things use to stay alive and healthy.</p> <p><b>Oxygen</b> - Oxygen is a gas in the air that is vital for living things.</p> <p><b>Carbon dioxide</b> - Carbon dioxide is the gas in the air.</p>	<p><a href="#">Lesson: Function of blood   KS2 Science   Oak National Academy (thenational.academy)</a></p>	Describe what blood vessels are and what they do	<p>Blood vessels transport blood all around the body, to and from your heart.</p> <p>Arteries are blood vessels. Most arteries deliver blood rich in oxygen to all the parts of the body.</p> <p>Veins are blood vessels. Most veins return blood low in oxygen to the heart.</p> <p>Blood is always red. Blood travelling through veins may appear blue because of how light travels through our skin.</p>	<p><b>Blood vessels</b> - Blood vessels are tubes through which blood flows around the body.</p> <p><b>Arteries</b> - Arteries are blood vessels that carry blood away from the heart.</p> <p><b>Veins</b> - Veins are blood vessels that carry blood back to the heart.</p> <p><b>Oxygenated</b> - Oxygenated blood is blood rich in oxygen.</p> <p><b>Deoxygenated</b> - Deoxygenated blood is blood low in oxygen.</p>		Describe how water and nutrients from food travel through the body.	<p>Nutrients have different purposes and come from different foods.</p> <p>A healthy diet is essential for maintaining the nutrients our body needs to function properly.</p> <p>During digestion, your small intestine absorbs the nutrients from your food and passes them into the bloodstream.</p> <p>Water and nutrients from food are transported in blood around the body to where they are needed.</p>	<p><b>Nutrients</b> - Nutrients are important substances that living things use to stay alive and healthy.</p> <p><b>Digest</b> - When we digest food it is broken down so that nutrients can be used by the body.</p> <p><b>Intestine</b> - The intestine is a long tube that is split into the small and large intestine, through which food travels from the stomach and out of the body while it is being digested.</p> <p><b>Bloodstream</b> - Bloodstream is the flow or movement of blood throughout the body.</p>		What effect does exercise have on muscles?	<p>Describe how muscles enable movement</p> <p>Describe what happens to muscles during exercise</p> <p>Describe how muscles can change over time due to exercise</p>	<p><b>Muscles</b> - muscles always work in pairs – they are connected to the bones and when one contracts it moves the bone it is connected to.</p> <p><b>Muscle pairs</b> – when 1 muscle contracts the opposite muscle relaxes</p> <p><b>Contract</b>- when a muscle contracts it gets shorter and fatter</p> <p><b>Relaxed muscles</b> – muscle gets longer and thinner</p> <p><b>Fibres</b> – muscles are made up of fibres</p>	<p><a href="#">How do your muscles work? - BBC Bitesize</a></p>	What happens to the circulatory system during exercise?	<p>Describe the changes that will occur during exercise</p> <p>Describe how an athlete's body will respond differently to exercise</p>	<p><b>Pulse</b> -</p> <p><b>Resting heart rate</b> – how many times your heart beats when you are sitting still.</p>	<p>Complete table showing at rest heart rate + after exercise. What do you think would be different in an athlete? Why?</p>	<p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>Observing and raising questions - how to be healthy</li> <li>Use their observations and ideas to suggest answers to questions.</li> <li>how have our ideas about the diseases that affect the circulatory system changed over time? why do you think this has happened? can you explain your answer?</li> </ul> <p><b>Planning different types of scientific enquiries to answer questions –</b></p> <ul style="list-style-type: none"> <li>which type of exercise has the greatest effect on our heart rate?</li> <li>Taking measurements, using a range of scientific equipment - what should I measure? - what should I measure with? - how can I be sure I am being accurate?</li> <li>Recording and reporting data and results - how can I share my findings?</li> </ul>
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Year	Knowledge			Skills
Y 5 / Y 6  Term 4  Year B	<p><b>Focus:</b> Which bits of my body could I live without? (Part 2)</p> <p><b>National Curriculum Knowledge</b>                      ✓ Animals including Humans - Digestion</p> <p><b>Prior Learning:</b> What if I had animal teeth? LKS2 Which bits of my body could I live without? (Part 1) UKS2</p>			<p><b>Knowledge Skills and Understanding</b></p> <ul style="list-style-type: none"> <li>To know why nutrients are important to the human body</li> <li>the human body needs fuel in the form of food to function - we need nutrients to keep healthy</li> <li>the main food groups are carbohydrates, proteins and fats</li> <li>we also need minerals and nutrients</li> <li>To know why a healthy diet and exercise are important - the body needs a balanced diet to function properly</li> <li>To know how the body recovers from disease and damage - the body has white blood cells that help it fight infection - blood clots stop microorganisms from getting in to the body if the skin is cut - we need to sleep in order or heal and recover</li> <li>To know how nutrients and water are transported within animals, including humans</li> <li>label the main digestive organs</li> <li>know the function of each stage of the digestive system</li> </ul>
	Objective	Sticky Knowledge	Key Vocabulary and Definitions	Resources
	describe the first part of the journey of food through the human digestive system	At the start of the digestive system, the tongue moves food around, teeth chop it and saliva makes it easier to swallow. Food is pushed down the oesophagus into the stomach where it is broken down further by stomach acid.	<b>Digestive system</b> - The digestive system is all the organs in the body that break down and digest food. They are linked from the mouth to the anus. <b>Digestion</b> - Digestion occurs when food is broken down so that nutrients can be absorbed by the body. <b>Saliva</b> - Saliva is a watery liquid in the mouth that keeps it wet and helps prepare food for digestion. <b>Oesophagus</b> - The oesophagus is the tube in the body that takes food from the mouth to the stomach. <b>Stomach acid</b> - Stomach acid is a digestive fluid, formed within the stomach lining, that helps digest food.	<a href="#">What is the digestive system? - BBC Bitesize</a> 
	describe the final part of the journey of food through the human digestive system.	From the stomach, food moves through the small intestine where digested nutrients are absorbed through the walls. Undigested food travels through the large intestine, where remaining water is removed. Waste food is stored as faeces in the rectum and leaves the body through the anus.	<b>Intestine</b> - The intestine is a long tube that is split into the small and large intestine, through which food travels from the stomach and out of the body while it is being digested. <b>Nutrients</b> - Nutrients are important substances that living things use to stay alive and healthy. Animals take in nutrients from their food. <b>Rectum</b> - The rectum is the end part of the large intestine that holds faeces before it leaves the body through the anus. <b>Faeces</b> - Animals make solid waste in the form of faeces. <b>Anus</b> - The anus is the hole at the end of the digestive system through which solid waste is pushed out.	
	What are the key parts of a healthy diet?	Describe the key parts of a healthy diet Describe the effect of each food group Give examples of nutritional deficiencies	7 essential nutrients needed to maintain healthy life:- <b>Water</b> <b>Carbohydrates</b> – releases sugars - gives energy into the body <b>Protein</b> – growth and repair (repair from exercise) <b>Fat</b> - storing energy, help to keep us warm <b>Vitamins</b> – eg vitamin C - helps protect cells maintain healthy skin <b>Minerals</b> – eg calcium – healthy teeth and bones <b>Fibre</b> – keeps food moving through the gut and keeps it healthy	<a href="#">The effects of diet, exercise and drugs - BBC Bitesize</a> Definition of balanced diet – make a table – nutrient – found in – role in the body NHS eatwell plate - menu
	Find out about the comparative nutrition in different breakfast cereals	Describe nutritional values of different breakfast cereals. Understand what a portion size looks like.	<b>Portion size</b> – the recommended amount of a given food to maintain a healthy diet.	Carry out investigation into portion sizes – use the internet to find data, record findings
To know how the body recovers from disease and damage	the body has white blood cells that help it fight infection - blood clots stop microorganisms from getting in to the body if the skin is cut - We need to sleep in order or heal and recover -	<b>Drug</b> – a drug is a chemical that has An effect on the body. Most drugs are used to treat illness.		
				<p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>Observing and raising questions -</li> <li>Use their observations and ideas to suggest answers to questions.</li> <li>Recording data</li> <li>Find out about the comparative nutrition in different breakfast cereals - What other foods does this make you curious about?</li> </ul> <p><b>Investigation</b></p> <ul style="list-style-type: none"> <li>Do you know your portion sizes?</li> <li>How many peas are there in a portion? - How much cereal should you pour into your bowl?</li> </ul> <p><b>Research</b></p> <ul style="list-style-type: none"> <li>Find out about how the body fights diseases</li> </ul>



Year	Knowledge		Skills	
Y5 / Y6  Term 6  Year B	<p><u>Focus:</u> Circuit Breaker or Circuit Fixer?</p> <p><u>National Curriculum Knowledge</u></p> <p>✓ Electricity</p> <p><u>Prior Learning:</u> Simple circuits and conductors (LKS2)</p>		<p><b>Knowledge Skills and Understanding</b></p> <p><b>To know what a battery is</b></p> <ul style="list-style-type: none"> <li>a source of power so that electrical objects can work</li> </ul> <p><b>To know what the function of a switch is</b></p> <ul style="list-style-type: none"> <li>an electrical circuit electricity flows from one end of a circuit to another</li> <li>a switch will break the flow of electricity</li> </ul> <p><b>To know how to draw an electrical circuit accurately</b> show how an electrical circuit is set up represent the electrical components</p> <p><b>To know how to construct a circuit</b></p> <ul style="list-style-type: none"> <li>when all the electrical components are connected in a ring or loop, this is a series circuit each component follows the next in a loop</li> </ul> <p><b>To know that if you change one component in a circuit it can have an effect on the brightness of a bulb or the speed of a motor.</b></p> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>what will happen if you change the type of battery?</li> <li>what can you do to make the bulb brighter?</li> <li>what can you do to make the motor faster?</li> <li>what other things can you change in your circuit?</li> <li>what will you need to control to make your investigation valid?</li> <li>how can you be sure it was a fair test?</li> </ul> <p><b>Performing simple tests</b></p> <ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific diagrams</li> <li>how can you show what you were investigating using correct symbols?</li> </ul> <p><b>Research</b></p> <ul style="list-style-type: none"> <li>Finding out about Benjamin Franklin and his findings.</li> </ul>	
	<p><b>Objective</b></p> <p>Build and test a range of simple circuits using common components.</p>	<p><b>Sticky Knowledge</b></p> <p>The basic elements of an electrical circuit are called components. A flow of electricity moves from the positive terminal to the negative terminal of the cell or battery. The flow of electricity is pushed by the cell or battery, through the wires to the other components in the circuit.</p>	<p><b>Key Vocabulary and Definitions</b></p> <p><b>Component</b> - A component is a device in a circuit that has a specific function. <b>Cell</b> - A cell is a single unit that is needed for electricity to flow around a circuit. <b>Battery</b> - When two or more cells are used together, it is called a battery. <b>Terminal</b> - Cells and batteries have a negative and positive terminal.</p>	<p><b>Resources</b></p>
	<p>use circuit symbols to represent components in a simple circuit diagram</p>	<p>Circuit symbols are small images that represent different electrical components. Circuit symbols allow everybody in the world to understand how a circuit is made. Circuit diagrams show how the components in a circuit are connected together.</p>	<p><b>Circuit symbol</b> - A circuit symbol is a simple picture or shape used to represent a component in a circuit diagram. <b>Circuit diagram</b> - A circuit diagram is a pictorial representation of a circuit.</p>	<p>Always use a ruler – must be a rectangle</p>
	<p>investigate variables that may affect the brightness of a bulb in an electric circuit.</p>	<p>A variable is any one thing in an investigation which could be changed. Adding other components to the circuit may affect the brightness of a bulb. Changing the position of the bulb in the circuit may affect how brightly it shines. A bulb will be the same brightness wherever you place it in a circuit.</p>	<p><b>Brightness</b> - The brightness of a bulb is the amount of light it produces. <b>Variable</b> - A variable is a factor that can be changed in an investigation.</p>	<p>Light sensor on an App or data logger</p>
	<p>predict and test how to change the volume of buzzers in a circuit.</p>	<p>Increasing the number and voltage of batteries increases the electrical push they provide. Sensors and data loggers can be used to make and record accurate measurements of light and sound.</p>	<p><b>Decibel</b> - A decibel is a unit used to measure the volume of sound.</p>	<p>Carry out investigation – use data logger or sound sensor on an app</p>
	<p>explain how a switch is used in a simple circuit.</p>	<p>Switches can turn a circuit off by making a gap so electricity cannot flow. Traditional switches work by making a pair of conductors touch each other or separate from each other. Engineers have created innovative switches which are sensitive to human touch. Switches for simple circuits can be created from a range of everyday conductors and insulators.</p>	<p><b>Switch</b> - A switch is part of an electrical circuit that can stop or allow electricity to flow.</p>	<p>Look at different types of switches Make a circuit with a switch using knowledge of conductors.</p>
	<p>design a simple electrical circuit to detect water levels.</p>	<p>There are sensors all around us to detect changes in things like temperature, motion, moisture, light, distance etc. Sensors are used in everyday appliances such as washing machines, lights, burglar and fire alarms. Strict safety rules must be followed when planning to use electrical components near water. Engineers generate ideas to invent, design, and build objects that matter.</p>	<p><b>Sensor</b> - A sensor is a device that can detect and monitor changes. <b>Detect</b> - To detect something is to discover or notice it. <b>Design</b> - To design something is to make a plan and a drawing describing how it could be built.</p>	<p>For teacher information: <a href="#">Lesson: Electrical sensors: design (non-statutory)   KS2 Science   Oak National Academy (thenational.academy)</a></p>

# Whole School Science Curriculum

