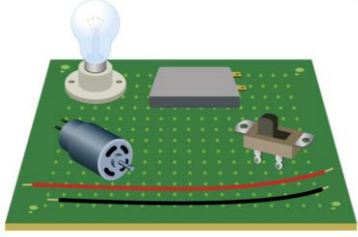



**Medium Term Plan: Electricity Y5/6**

Enquiry Type:	Working Scientifically Concepts:	Previous Scientific Vocabulary	New Scientific vocabulary
<ul style="list-style-type: none"> <li>Comparative and fair testing</li> <li>Pattern seeking</li> <li>Research using secondary sources</li> <li>Identifying, classifying and grouping</li> </ul>	<ul style="list-style-type: none"> <li>Asking questions</li> <li>Making observations and measuring them</li> <li>Engaging in practical enquiry</li> <li>Recording and presenting evidence</li> <li>Answering questions and concluding</li> <li>Evaluating and predicting</li> <li>Communicating findings.</li> </ul>	<ul style="list-style-type: none"> <li>conductor</li> <li>insulator</li> <li>switch</li> <li>circuit</li> <li>buzzer</li> <li>cells</li> <li>wire</li> </ul>	<ul style="list-style-type: none"> <li>battery</li> <li>component</li> <li>motor</li> <li>voltage</li> <li>function</li> <li>symbols</li> <li>series</li> <li>parallel</li> </ul>
Previous Learning End Point Assessment in this concept:	Previous Learning End Point Assessment in working scientifically concepts:	End Point Assessment Statements:	
<p><b>Electricity:</b></p> <ol style="list-style-type: none"> <li>I can identify common appliances that run on electricity (e.g. TV, oven, fridge, computers, mobile phones).</li> <li>I can name and identify the basic components of a circuit: wires, cells, bulbs, switches and buzzers.</li> <li>I can construct a simple electrical circuit, including: cells, wires, bulbs, switches and buzzers, naming and identifying the different parts.</li> <li>I can explain the role of different electrical components and what would happen if they were altered or not used.</li> <li>I can 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>I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>I can recognise some common conductors (copper, aluminium, gold) and insulators (glass, air, plastic, rubber), and associate metals with being good conductors.</li> <li>I can compare and group materials based on their ability to conduct and insulate electricity.</li> </ol>	<p>I can draw on prior knowledge to help answer a question.</p> <p>I can make systematic and careful observations.</p> <p>I can use a range of equipment for measuring length, time, temperature and capacity.</p> <p>I can record my measurements e.g. using tables, tally charts and bar charts (given templates when needed).</p> <p>I can interpret the data to generate simple comparative statements based on my evidence.</p> <p>I can begin to identify naturally occurring patterns and causal relationships.</p>	<p><b>Electricity:</b></p> <ol style="list-style-type: none"> <li>I can make observations about the brightness of a lamp or the volume of a buzzer where the number of cells or voltage varies.</li> <li>I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>I can predict the outcome of tests involving the brightness of bulbs or the loudness of a buzzer where the number of cells or voltage varies.</li> <li>I can explain and evaluate the impact that cell numbers or voltage has on the brightness of the bulb or loudness of a buzzer.</li> <li>I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</li> <li>I can explain how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</li> <li>I can use recognised symbols when representing a simple circuit in a diagram (cell, wire, bulb, buzzer, switch).</li> </ol>	

	Revisit of knowledge short Afl lesson	Lesson 1 and 2	Lesson 3	Lesson 4	Lesson 5 + 6	Lesson 7
<b>Learning Question</b>		Can you make circuits from diagrams and diagrams from circuits	Does the number of cells / voltage affect the brightness of a bulb?	Does the number of cells / voltage affect the loudness of a buzzer?	Can you design and carry out your own investigation to compare and give reasons for variations in component functions?	How does a series circuit differ to a parallel circuit.
<b>Enquiry Type</b>		Pattern seeking Identifying, classifying and grouping	Fair and comparative test	Fair and comparative test	Fair and comparative test	Identifying, classifying and grouping
<b>Conceptual Knowledge</b>	Prior end of blocks assessment	I can use recognised symbols when representing a simple circuit in a diagram (cell, wire, bulb, buzzer, switch).	I can make observations about the brightness of a lamp or the volume of a buzzer where the number of cells or voltage varies. I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit I can predict the outcome of tests involving the brightness of bulbs or the loudness of a buzzer where the number of cells or voltage varies. I can explain and evaluate the impact that cell numbers or voltage has on the brightness of the bulb or loudness of a buzzer.	I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. I can explain how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.	I can use recognised symbols when representing a simple circuit in a diagram (cell, wire, bulb, buzzer, switch).	
<b>Working Scientifically</b>		I can select from a range of practical resources to gather evidence to answer their questions.	I can use the scientific knowledge gained from enquiry work to make predictions I can investigate using comparative and fair tests. I can decide how to record and present evidence. I can record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. In my conclusions, I can: identify causal relationships and patterns in the natural world from my evidence; identify results that do not fit the overall pattern; and explain my findings using my subject knowledge.	I can use the scientific knowledge gained from enquiry work to make predictions I can investigate using comparative and fair tests.	I can record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys. I can present the same data in different ways in order to help with answering the question.	

<b>Concept flashback (previous phase or earlier in the year)</b>		Light Y3/4: 1. <a href="https://wordwall.net/resource/2898124/science/light-sources-year-3">https://wordwall.net/resource/2898124/science/light-sources-year-3</a> 2. Define natural source	Sound Y3/4 1. <a href="https://wordwall.net/resource/7804340/y4-changing-volume">https://wordwall.net/resource/7804340/y4-changing-volume</a> 2. What is pitch?	Animals including humans (teeth) Y3/4 1. <a href="https://wordwall.net/resource/2916595/science/types-of-teeth-year-4">https://wordwall.net/resource/2916595/science/types-of-teeth-year-4</a> 2. Define enamel and decay	Animals including humans (digestion) Y3/4 1. <a href="https://wordwall.net/resource/11288156/science/digestive-system-quiz">https://wordwall.net/resource/11288156/science/digestive-system-quiz</a> <a href="https://wordwall.net/resource/2862736/science/labeling-the-digestive-system-year-4">https://wordwall.net/resource/2862736/science/labeling-the-digestive-system-year-4</a> 2. Define molar (show image for stimuli)	State of matter Y3/4: 1. <a href="https://wordwall.net/resource/2372616/science/year-4-states-of-matter-key-knowledge-water-cycle">https://wordwall.net/resource/2372616/science/year-4-states-of-matter-key-knowledge-water-cycle</a> 2. Define solid, liquid and gas (can draw to show these – particle diagram)
<b>Review/ Revisit</b>	Range of short activities: - recognising symbols - will the lamp light up if ...? Why? - grouping materials on their conductivity and insulator capabilities.	1. Knowledge from previous end point assessment in the concept	1. Knowledge from previous end point assessment in the concept 2. Label the components	1. Knowledge from previous end point assessment in the concept 2. Label the components	1. Knowledge from previous end point assessment in the concept 2. Label the components	1. Knowledge from previous end point assessment in the concept 2. Label the components
<b>Read</b>		Page 73 – pre-read recap	Page 74 – pre-read on need for components being set up properly.	Page 75 – circuit diagrams.	Page 78 – additional resource also for idea stimulation	Page 78 – summary of what we have investigated.
<b>Teach</b>		<a href="https://explorify.uk/en/activities/zoom-in-zoom-out/inside-out">https://explorify.uk/en/activities/zoom-in-zoom-out/inside-out</a> Starter – what am I. Watch the video and children are to try and write down as many appliances as they can which they think use electricity.  Use the electricity wand to show children how you need a constant flow of electricity for components to work – link to disconnected wires and switches.  Based off practice – teach which each component is.	What a hypothesis and prediction are.  What do they think will happen and why?  Recap different variables and what makes a comparative and fair test.  How can you measure brightness? – discussion idea to generate possible methods for measurement.  What the term correlation means and different types of correlation	Introduce a data collector (decibels) and explain what this does. Children to predict which component this apparatus would be needed for.  Recap the variables and any misconceptions in the previous week with working scientifically skills.  Teach validity – what this means and links to previous reflection tasks.	Show children resistance wire and what this is. Recap why we can use this material compared to insulators (link to prior learning in the concept).  Possible independent variables: - number of bulbs on the brightness of a bulb - thickness of the wire on the brightness of a bulb - length of resistance wire on the brightness of a bulb - number of buzzers on the brightness of a bulb	What is a series circuit – draw on examples from across the unit. Introduce a parallel circuit.  Look at household’s appliances and electrical use – series or parallel  Look at some parallel circuits and what will and wont work in these and WHY.  After practice: what did we find? Address misconceptions and teach the science behind each circuit working or not working (mini teacher opportunity)
<b>Practice</b>		Discussion during the teach.  Match the symbols to their component name (bulb, cell, etc)  After, ask the children if this circuit will work: 	Discussion on how to measure brightness.  Deciding which variables they will need to change, measure and keep constant.  Carry out the investigation and collate results.	Deciding which variables they will need to change, measure and keep constant.  Carry out the investigation and collate results. - learning from previous lesson - draw diagram for basic initial circuit.	Chose what comparative and fair test to conduct and the variables.  Carry out the investigation and collate results.  learning from previous lesson	In groups, looking at the different circuits (series and parallel), children are to identify which ones will and will not work and why.
<b>Apply</b>		Give the children three drawn circuits for them to replicate and state if they do or do not work. Children are to then create a circuit and then draw this circuit – stating if it works or doesn’t work and why this is. Main components to focus on: bulbs, cells, wires, switch.	Decide what type of graph they will need to do.  Draw a conclusion based on their findings.	Decide what type of graph they will need to do.  Draw a conclusion based on their findings.  Comment on the validity of their results.	Conclusion and commentary on validity,	Match the circuit diagram to the written description and explain why they have made this decision to group these two diagrams and explanations.
<b>Reflect</b>		Share findings and why children deciphered that outcome.	Why did people’s results differ? Does the difference across groups affect the validity? Why or why not?	Concept cartoon – wire consideration. 	Share your findings with another group who investigated something different.	Share ideas and reasons for grouping.


**End of Unit Assessment:**

Range of different circuits: will the circuit work – prediction. Carry it out and state if it did or did not work. Explain reasons for working and not working.

**Medium Term Plan: Light Y5/6**

Enquiry Type:	Working Scientifically Concepts:	Previous Scientific Vocabulary	New Scientific vocabulary
<ul style="list-style-type: none"> <li>Comparative and fair testing</li> <li>Pattern seeking</li> <li>Research using secondary sources</li> <li>Identifying, classifying and grouping</li> </ul>	<ul style="list-style-type: none"> <li>Asking questions</li> <li>Making observations and measuring them</li> <li>Engaging in practical enquiry</li> <li>Recording and presenting evidence</li> <li>Answering questions and concluding</li> <li>Evaluating and predicting</li> <li>Communicating findings.</li> </ul>	<ul style="list-style-type: none"> <li>Light</li> <li>Shadow</li> <li>Darkness</li> <li>Man-made</li> <li>Natural</li> <li>Protection</li> </ul>	<ul style="list-style-type: none"> <li>Reflect</li> <li>Light</li> <li>Straight line</li> <li>refraction</li> <li>Thomas Edison</li> <li>retina</li> <li>optic nerve</li> <li>brain</li> </ul>
Previous Learning End Point Assessment in this concept:		Previous Learning End Point Assessment in working scientifically concepts:	End Point Assessment Statements:
<p><b>Light:</b></p> <ol style="list-style-type: none"> <li>I can recognise that we need light in order to see things and that dark is the absence of light.</li> <li>I can notice that light is reflected from surfaces.</li> <li>I can describe the process of reflection using scientific vocabulary.</li> <li>I can recognise that light from the sun can be dangerous and that there are ways to protect your eyes (e.g. sun-glasses, avoid looking at the sun, sun-cream)</li> <li>I can recognise that shadows are formed when the light (from a light source) is blocked by a solid (opaque) object.</li> <li>I can explore and find patterns in the way that the size of shadows can change.</li> <li>I can predict and explain why these changes occur, using what I already know.</li> </ol>		<p>I can draw on prior knowledge to help answer a question.</p> <p>I can make systematic and careful observations.</p> <p>I can use a range of equipment for measuring length, time, temperature and capacity.</p> <p>I can record my measurements e.g. using tables, tally charts and bar charts (given templates when needed).</p> <p>I can interpret the data to generate simple comparative statements based on my evidence.</p> <p>I can begin to identify naturally occurring patterns and causal relationships.</p>	<p><b>Light</b></p> <ol style="list-style-type: none"> <li>I can 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.</li> <li>I can explain that light comes from sources and that we need light to see things and that darkness is the absence of light.</li> <li>I can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</li> <li>I can identify different parts of the eye and understand the role they play in helping us see.</li> <li>I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ol>

	Revisit of knowledge short Afl lesson	Lesson 1	Lesson 2	Lesson 3 and 4	Lesson 5	Lesson 6	Lesson 7
<b>Learning Question</b>		How are shadows formed?	How does the position of a light source affect the size of a shadow?	Why do we see the moon?	How can a submarine see where it is going?	Are all soap bubbles the same colour? Why do we see a rainbow?	What significance did Thomas Edison have in the study of light?
<b>Enquiry Type</b>		Identifying, classifying and grouping	Fair and comparative test	Research using secondary sources	Research using secondary sources Pattern seeking	Pattern seeking	Research using secondary sources.
<b>Conceptual Knowledge</b>	Prior end of blocks assessment	I can explain that light comes from sources and that we need light to see things and that darkness is the absence of light. I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	I can explain that light comes from sources and that we need light to see things and that darkness is the absence of light.	I can identify different parts of the eye and understand the role they play in helping us see. I can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.	I can 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	I can 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	I can 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. I can demonstrate that dissolving, mixing and changes of state are reversible changes
<b>Working Scientifically</b>		I can present the same data in different ways in order to help with answering the question. I can answer my own and others' questions based on observations I have made, measurements I have taken or information I have gained from secondary sources.	I can decide how to record and present evidence. I can record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. I can record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs.	I can answer my own and others' questions based on observations I have made, measurements I have taken or information I have gained from secondary sources. When doing this, I can discuss whether other evidence e.g. from other groups, secondary sources and my scientific understanding, supports or refutes their answer.	I can answer my own and others' questions based on observations I have made, measurements I have taken or information I have gained from secondary sources. When doing this, I can discuss whether other evidence e.g. from other groups, secondary sources and my scientific understanding, supports or refutes their answer.	I can: identify causal relationships and patterns in the natural world from my evidence; identify results that do not fit the overall pattern; and explain my findings using my subject knowledge. I can look for patterns and relationships using a suitable sample.	I can answer my own and others' questions based on observations I have made, measurements I have taken or information I have gained from secondary sources. When doing this, I can discuss whether other evidence e.g. from other groups, secondary sources and my scientific understanding, supports or refutes their answer.
<b>Concept Flashback (previous phase or earlier that year)</b>		Light Y3/4: 1. <a href="https://wordwall.net/resource/3068802/science/mirror-reflection-year-3">https://wordwall.net/resource/3068802/science/mirror-reflection-year-3</a> 2. Define reflection	Electricity Y5/6: 1. <a href="https://wordwall.net/resource/2898861/science/electricity-vocabulary-year-6">https://wordwall.net/resource/2898861/science/electricity-vocabulary-year-6</a> 2. Define voltage	Electricity Y5/6 1. <a href="https://wordwall.net/resource/2898835/science/electricity-vocabulary-year-6">https://wordwall.net/resource/2898835/science/electricity-vocabulary-year-6</a> 2. define conductor and insulator	Forces and magnets Y3/4 1. <a href="https://wordwall.net/resource/2404881/science/year-3-forces-magnets-key-vocabulary">https://wordwall.net/resource/2404881/science/year-3-forces-magnets-key-vocabulary</a>	Rocks and Soil Y3/4: 1. <a href="https://wordwall.net/resource/2917101/science/rock-descriptions-year-3">https://wordwall.net/resource/2917101/science/rock-descriptions-year-3</a> 2. Define fossilisation	Plants Y3/4: 1. <a href="https://wordwall.net/resource/4001291/science/sunflower-life-cycle">https://wordwall.net/resource/4001291/science/sunflower-life-cycle</a> 2. Define pollination

<b>Review/ Revisit</b>	Concept map for children to annotate off: - sort man-made and natural light sources	1. Knowledge from previous end point assessment	1. Knowledge from previous end point assessment 2. What is the animal based of the shadow? How do you know?	1. Knowledge from previous end point assessment 2. What impacts on the size of a shadow?	1. Knowledge from previous end point assessment 2. Shadows and how we see an apple/toothbrush etc?	1. Knowledge from previous end point assessment 2. Will this submarine be able to see (similar to reflect on previous lesson)	1. Knowledge from previous end point assessment 2. Shadow sizes. 3. Submarines and light travelling in straight line. 4. Label the eye.
<b>Read</b>	- think about safety from the sun	Page 80 – Y3/4 phase recap Knowledge mat	Concept cartoon One another's findings Knowledge mat	Page 82 – pre-read for background knowledge Knowledge mat	Page 83 – read before application as summary for what we have covered so far. Knowledge mat	Part of teach on flip Concept cartoons Knowledge mat	Shortened biography of Thomas Edison
<b>Teach</b>	- what is darkness - shadows changing over the day -- what is a shadow?	Introduce 'light' - what do you know already about light?  What is a light source? Sort into natural and man-made (pairs activity).  How does it travel? Explain it travels in straight lines. (Talcum powder and a torch demo).  Show children the video of attraction <a href="https://www.youtube.com/watch?v=Xes3huBpnQc">https://www.youtube.com/watch?v=Xes3huBpnQc</a>  Ask them how it works and allude to the fact that it is shadows that are forming. How do shadows work? Put a picture of the shadow of a giraffe on the board and ask what animal is it and how they know – shadows take the form of the object they are casted from.	What is a shadow recap – address any misconceptions from prior learning and afl of application in books.  Recap variables and what will the children be measuring.  Discuss the appropriate measuring tools for the dependent variable.  Discussion around controlling variable and teach the term validity – explain what this means and how it can impact results.	Human eye and its functions – look at the human eye to understand it biologically.  Discuss how blindness can be due to an impairment of different structures of the eye – not always the same.  Look at how we see an apple – application of knowledge.  Teach about light travelling in straight lines and reflection Link to light sources (Y3 – what does source mean, difference between man-made and natural).  Rule of three Which resources do you use when researching	Provide the children with different challenge and using the tubes they must 'prove' each statement. → light can travel in a straight line, showing how light does not bend, how a reflective surface can cause light to 'change' direction.  Teach how light travels in a straight line – bring it back to light and the talcum powder in lesson 1 (video link on YouTube if needed).  Introduce what a submarine is and how they see – periscope.	Pose the question and give the children bubbles and allow them to explore what they observe – pattern seeking.  Talk about what is occurring scientifically. Introduce (in person) the straw appearing bent and the arrow in the water and how this is due to a process called refraction.  Look at what causes a rainbow – process of refraction and colour spectrum.	Who is Thomas Edison – ask if the children have heard of him? Why is he important?  How to research and using the recommended website pages effectively.
<b>Practice</b>		Children to guess who is who from the shadows of the class.	Discussion of variables. Carry out the investigation and collate results accordingly.	Labelling the human eye and understanding the process of light entering the eye and the optic nerve sending impulses to the brain.	Using the statements to prove that light can travel in a straight line, showing how light does not bend, how a reflective surface can cause light to 'change' direction	Discussion about objects appearance and what this is showing. Children to explore different challenge with changing medium to observe refraction in different ways.	Answering the first question as a class in the research pack – sharing tips etc.
<b>Apply</b>		Written explanation of how they knew who each person was – shadows take the form of the object which cast them.	Conclusion of data and evaluation of the procedure.  Answer the concept cartoon:	How do we see the moon?  Children to produce a poster in pairs answering the enquiry question. They must denote the process and can use diagrams or written explanations for this process.	Pose the question: How can a submarine see where it is going? In groups, children are to design a periscope for a submarine to use (use equipment). Draw a scientific diagram of a working periscope and write a short explanation of what they have found.	What causes a rainbow? - children to write their own response (using a key word resource bank) to explain why we see rainbows	Complete and design a poster or leaflet or fact sheet card (children to decide how to present findings) on the significance of Thomas Edison.  Share ideas – magpie ideas from another pair (pair stray).
<b>Reflect</b>		Why is this shadow not fully formed?	Discuss the concept cartoon: class answer to be written in all books in blue pen	Diagram and written explanation of seeing an apple – do you agree with it? Why or why not?	Will this submarine periscope work? Why or why not?	Concept cartoon – in books (write their responses) and then in blue pen write the class response. Refraction of the straw	Statement about Edison to think and consider

**End of Unit Assessment:**

Concept cartoon carousel in pairs – who do you agree with and why. Discuss answers.

Design their own concept cartoon for other children to answer

**Medium Term Plan: Forces Y5/6**

Enquiry Type:	Working Scientifically Concepts:	Previous Scientific Vocabulary	New Scientific vocabulary
<ul style="list-style-type: none"> <li>Comparative and fair testing</li> <li>Pattern seeking</li> <li>Research using secondary sources</li> </ul>	<ul style="list-style-type: none"> <li>Asking questions</li> <li>Making observations and measuring them</li> <li>Engaging in practical enquiry</li> <li>Recording and presenting evidence</li> <li>Answering questions and concluding</li> <li>Evaluating and predicting</li> <li>Communicating findings.</li> </ul>	<ul style="list-style-type: none"> <li>force</li> <li>magnet</li> <li>attract</li> <li>repel</li> <li>poles</li> <li>magnetic field</li> </ul>	<ul style="list-style-type: none"> <li>gravity</li> <li>air resistance</li> <li>water resistance</li> <li>friction</li> <li>weight</li> <li>mass</li> <li>drag</li> <li>thrust</li> </ul>
Previous Learning End Point Assessment in this concept:		Previous Learning End Point Assessment in working scientifically concepts:	End Point Assessment Statements:
<p><b>Forces and Magnets:</b></p> <ol style="list-style-type: none"> <li>I can compare how things move on different surfaces.</li> <li>I can recognise that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>I can observe how magnets attract or repel each other and attract some materials and not others.</li> <li>I can describe magnets as having two poles</li> <li>I can predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> <li>I can group everyday materials on the basis of whether they are attracted to a magnet.</li> <li>I can compare and group everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials.</li> <li>I can make scientific predictions, using prior knowledge, about unfamiliar materials.</li> </ol>		<p>I can draw on prior knowledge to help answer a question. I can make systematic and careful observations. I can use a range of equipment for measuring length, time, temperature and capacity. I can record my measurements e.g. using tables, tally charts and bar charts (given templates when needed). I can begin to identify naturally occurring patterns and causal relationships.</p>	<p><b>Forces:</b></p> <ol style="list-style-type: none"> <li>I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>I can explain how air resistance, water resistance and friction acts on objects.</li> <li>I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ol>

	Revisit of knowledge short Afl lesson	Lesson 1	Lesson 2 and 3	Lesson 4 and 5	Lesson 6	Lesson 7
Learning Question	What can I remember forces and magnets	How are weight and mass related?	Does shape affect the amount of air resistance?	Which general shape of boat experiences the least amount of water resistance?  Challenge: Does a boat experience more or less upthrust in salty water?	How can frictions affect a moving object?	How do levers, pulleys and gears operate?
Enquiry Type		Pattern seeking	Comparative and fair test	Comparative and fair test	Comparative and fair test	Research using secondary sources
Conceptual Knowledge	Prior units end point assessment	can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces I can explain how air resistance, water resistance and friction acts on objects.	I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces I can explain how air resistance, water resistance and friction acts on objects.	I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces I can explain how air resistance, water resistance and friction acts on objects.	I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
Working Scientifically		In my conclusions, I can: identify causal relationships and patterns in the natural world from my evidence; identify results that do not fit the overall pattern; and explain my findings using my subject knowledge.	I can carry out fair tests, recognising and controlling variables. I can decide how to record and present evidence. I can record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. I can identify any limitations that reduce the trust I have in my data.	I can carry out fair tests, recognising and controlling variables. I can decide how to record and present evidence. I can record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. I can discuss whether other evidence e.g. from other groups, secondary sources and my scientific understanding, supports or refutes their answer.	I can carry out fair tests, recognising and controlling variables. I can decide how to record and present evidence. I can record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. I can use the scientific knowledge gained from enquiry work to make predictions I can investigate using comparative and fair tests.	I can communicate my findings to an audience using relevant scientific language and illustrations. I can use resources to gather evidence for a question. I can recognise when secondary sources can be used to answer questions that cannot be answered through practical work.
Concept Flashback (prior phases or earlier in the year)		Electricity Y5/6: 3. <a href="https://wordwall.net/resource/2898861/science/electricity-vocabulary-year-6">https://wordwall.net/resource/2898861/science/electricity-vocabulary-year-6</a> 4. Define insulator and conductor	Light Y5/6 1. <a href="https://wordwall.net/resource/2862597/science/light-quiz-year-6">https://wordwall.net/resource/2862597/science/light-quiz-year-6</a> 2. Define reflection	Animals including humans (digestion and teeth) Y3/4: 1. Label the teeth on a diagram 2. Define the role of the stomach in digestion	Living things and their habitats Y3/4: 1. <a href="https://wordwall.net/resource/2371083/science/year-4-living-things-their-habitats-key-vocabulary">https://wordwall.net/resource/2371083/science/year-4-living-things-their-habitats-key-vocabulary</a>	Light Y5/6: 1. <a href="https://wordwall.net/resource/2972373/science/the-structure-of-the-eye-year-6">https://wordwall.net/resource/2972373/science/the-structure-of-the-eye-year-6</a> 2. Define the role of the optic nerve

Review/ Revisit	Low Stakes Quiz on Kahoot.	1. Previous end point assessment gaps	1. Previous end point assessment gaps 2. Mass and weight	1. Previous end point assessment gaps 2. Mass and weight 3. What is air resistance? – give an example for application of learnt knowledge	1. Previous end point assessment gaps 2. Mass and weight 3. What are air and water resistance? – give an example for application of learnt knowledge	1. Previous end point assessment gaps 2. Mass and weight 3. What are air and water resistance? – give an example for application of learnt knowledge 4. What is friction?																																																			
Read		What they already know about key terms. Basics of what they should know from Y3. What is gravity etc.	Reading concept cartoons Prior information from KS2 science book Explanations within teach	Before water resistance read KS2 science pages on air resistance as a revisit	Their scenario Graphs and others graphs	Additional research once they've explored the concept																																																			
Teach		Key terms.	Look at what air resistance is. Model examples of falling objects – talk about the general findings and awareness of falling objects (link to previous lesson).  How to calculate the mean and why in investigations results are carried out multiple times (validity)	What water resistance is – based off what they about air resistance. Use diagrams to illustrate air resistance and use prior knowledge to stimulate thoughts.  <a href="https://www.bbc.co.uk/teach/class-clips-video/investigating-air-and-water-resistance/z4m6nrd">https://www.bbc.co.uk/teach/class-clips-video/investigating-air-and-water-resistance/z4m6nrd</a>	Friction and how it counteracts the force moving the object. Drawing arrows on diagrams to showcase this scientific process. Children to understand that air resistance and water resistance are types of friction and we have already explored these examples.  Introduce that the children are to use toy cars to explore which surface a cyclist should take if their brakes failed and they had to go down a path.	Begin by looking at who Issac Newton is and how is he linked to forces (brief look at this laws of motion).  <a href="https://www.bbc.co.uk/teach/class-clips-video/science-ks2-discovering-the-work-of-Sir-Isaac-Newton/zr4mf4j">https://www.bbc.co.uk/teach/class-clips-video/science-ks2-discovering-the-work-of-Sir-Isaac-Newton/zr4mf4j</a>  Introduce the terms: lever, pulley and gears.																																																			
Practice		Concept cartoon	Making predictions on falling objects during input as their knowledge and awareness increases. Planning the investigation as a group – what the different variables will be.	Decide what the variables will be when planning the investigation. How will you change this? Will you collate multiple results? Why?	Drawing arrows on diagrams as groups. Hypothesising what will happen and what their variables will be.	Sequence of activities: 1. How can you use a stick, real and string to lift a mug? 2. Does the number of pulleys affect how much force is needed to lift an object? (spinning wheels and milk bottle). 3. Why can't an adult play on a seesaw with a child? 4. Can you use a lever to balance a one pound and one pence coin? (use pen and ruler for fulcrum and lever). What is a gear? (video to launch and look at toys).																																																			
Apply		Pattern seeking enquiry: - relationship between mass and weight of different classroom objects.	Conducting the investigation and concluding. Using this information, children will then plan another way of measuring and exploring air resistance – assessment opportunity.	Make boats out of tinfoil and decide which variable to change first (shape). Inferring the data and recommending a boat type and water type to answer the question based off their results.  <table border="1"> <tr> <td colspan="2"><b>BOAT INVESTIGATION</b></td> <td colspan="2">Enquiry question/s: Does a boat repair more or less upfloat in salty water? Which general shape of boat experiences the least amount of water resistance?</td> </tr> <tr> <td colspan="2">Variables we kept the same: Shoos, cranes, water, size, top and weight of material of boat, weight</td> <td colspan="2">Variable/s changed: Shape of boat, size of water</td> </tr> <tr> <td></td> <td>Test one</td> <td>Test two</td> <td>Test three</td> </tr> <tr> <td colspan="4">Variable change 1 <b>BOAT SHAPE</b></td> </tr> <tr> <td>Flat front</td> <td>8.5sec</td> <td>9.3sec</td> <td>9.8sec</td> </tr> <tr> <td>Triangular front</td> <td>5.5sec</td> <td>5.8sec</td> <td>4.5sec</td> </tr> <tr> <td>Curved front</td> <td>6.0sec</td> <td>6.5sec</td> <td>6.3sec</td> </tr> <tr> <td colspan="4">Variable change 2 <b>WATER TYPE</b></td> </tr> <tr> <td></td> <td colspan="2">FRESH WATER</td> <td>SALTY WATER</td> </tr> <tr> <td>Number of 1p coins held</td> <td colspan="2">22</td> <td>23</td> </tr> <tr> <td>Overall recommendations:</td> <td colspan="2"><b>BOAT SHAPE:</b> Salty The water moves around the shape of boat with the smallest amount of resistance because it allows the water to flow more. It pushes less against the water as it moves through it, decreasing the water resistance</td> <td><b>WATER TYPE:</b> Salty The salt adds molecules to the water and so there is a greater density, creating more upfloat. Boats would have greater buoyancy.</td> </tr> <tr> <td colspan="4">Possible improvements to our investigation Make boats that were more robust</td> </tr> <tr> <td colspan="4">What else could we have investigated? How much weight each shape of boat could carry Different shapes of hull (part under the water) Bubbly water or temperature of water</td> </tr> </table> <a href="https://di4c76y7libww.cloudfront.net/documents/UKS2_Science_Yr_5_Autumn_2_Forces_with_you_Session6_Resources.pdf">https://di4c76y7libww.cloudfront.net/documents/UKS2_Science_Yr_5_Autumn_2_Forces_with_you_Session6_Resources.pdf</a>	<b>BOAT INVESTIGATION</b>		Enquiry question/s: Does a boat repair more or less upfloat in salty water? Which general shape of boat experiences the least amount of water resistance?		Variables we kept the same: Shoos, cranes, water, size, top and weight of material of boat, weight		Variable/s changed: Shape of boat, size of water			Test one	Test two	Test three	Variable change 1 <b>BOAT SHAPE</b>				Flat front	8.5sec	9.3sec	9.8sec	Triangular front	5.5sec	5.8sec	4.5sec	Curved front	6.0sec	6.5sec	6.3sec	Variable change 2 <b>WATER TYPE</b>					FRESH WATER		SALTY WATER	Number of 1p coins held	22		23	Overall recommendations:	<b>BOAT SHAPE:</b> Salty The water moves around the shape of boat with the smallest amount of resistance because it allows the water to flow more. It pushes less against the water as it moves through it, decreasing the water resistance		<b>WATER TYPE:</b> Salty The salt adds molecules to the water and so there is a greater density, creating more upfloat. Boats would have greater buoyancy.	Possible improvements to our investigation Make boats that were more robust				What else could we have investigated? How much weight each shape of boat could carry Different shapes of hull (part under the water) Bubbly water or temperature of water				Outdoor learning. Which surface would be most suitable? – creating friction Create a suitable graph to illustrate their findings and then articulate which path the cyclist should take if they had no brakes. Children to collate information independently – assessment opportunity - did they take repeat measures?
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Reflect		Share findings and ideas.	Share findings and reliability – discussion based.	Sharing recommendations and why these may vary between groups?	Share findings. Discuss how groups collated information etc. What graph did you use? Why? Validity of results – reinforce scientific term: outlier.	Throughout after each task and during. Low stakes quiz and knowledge mat clarification.
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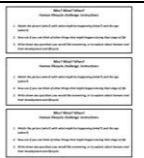
**End of block:**

Concept circles and children to fill these in with what information they know about each concept: this can be in diagram form or written sentences.

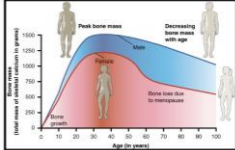
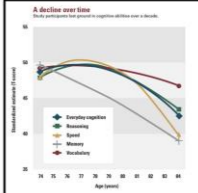
**Medium Term Plan: Animals including humans Cycle B Y5/6**

Enquiry Type:	Working Scientifically Concepts:	Previous Scientific Vocabulary	New Scientific vocabulary
<ul style="list-style-type: none"> <li>Comparative and fair testing</li> <li>Pattern seeking</li> <li>Research using secondary sources</li> <li>Identifying, classifying and grouping</li> <li>Observing over time.</li> </ul>	<ul style="list-style-type: none"> <li>Asking questions</li> <li>Making observations and measuring them</li> <li>Engaging in practical enquiry</li> <li>Recording and presenting evidence</li> <li>Answering questions and concluding</li> <li>Evaluating and predicting</li> <li>Communicating findings.</li> </ul>	<ul style="list-style-type: none"> <li>prey</li> <li>predator</li> <li>producer</li> <li>stomach</li> <li>intestines</li> <li>digestion</li> </ul>	<ul style="list-style-type: none"> <li>puberty</li> <li>gestation</li> <li>womb</li> <li>growth</li> <li>reproduce</li> <li>sperm</li> <li>egg foetus</li> <li>fertilisation</li> </ul>

Previous Learning End Point Assessment in this concept:	Previous Learning End Point Assessment in working scientifically concepts:	End Point Assessment Statements:
<p><b>Digestive System:</b></p> <ol style="list-style-type: none"> <li>I can identify the basic parts of the digestive system in humans.</li> <li>I can describe the functions of the basic parts of the digestive system.</li> <li>I can evaluate and understand how to keep the different basic parts of the digestive system healthy.</li> <li>I can identify the different types of teeth in humans and their simple functions</li> <li>I can construct and interpret a variety of food chains.</li> <li>I can identify (from food chains) the producers, prey and predators.</li> </ol>	<p>I can draw on prior knowledge to help answer a question.</p> <p>I can make systematic and careful observations.</p> <p>I can use a range of equipment for measuring length, time, temperature and capacity.</p> <p>I can record my measurements e.g. using tables, tally charts and bar charts (given templates when needed).</p> <p>I can interpret the data to generate simple comparative statements based on my evidence.</p> <p>I can begin to identify naturally occurring patterns and causal relationships.</p>	<p><b>Human Life Cycle</b></p> <ol style="list-style-type: none"> <li>I can identify the changes as humans develop to old age</li> <li>I can describe the changes as humans develop to old age.</li> <li>I can explain why these biological changes occur (e.g. women's hips grow wider to prepare for pregnancy)</li> </ol>

	Revisit of knowledge short Afl lesson	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Learning Question	What can I remember about the digestive system	What happens as humans develop to old age?	Is there a correlation between the gestation period and average lifespan of animals?	How does the foetus develop in the womb?	How does puberty change your body?	How does your body change from birth to old age?
Enquiry Type		Observing over time and research using secondary sources.	Pattern Seeking	Identifying, classifying and grouping Observing over time Research using secondary sources	Research using secondary sources	Pattern seeking Observing over time
Conceptual Knowledge	Prior units end point assessment	.I can identify the changes as humans develop to old age. I can describe these changes. I can explain why these changes occur.	.I can identify the changes as humans develop to old age. I can describe these changes. I can explain why these changes occur.	.I can identify the changes as humans develop to old age. I can describe these changes. I can explain why these changes occur.	.I can identify the changes as humans develop to old age. I can describe these changes. I can explain why these changes occur.	.I can identify the changes as humans develop to old age. I can describe these changes. I can explain why these changes occur.
Working Scientifically		I can record data using scientific diagrams and labels.	I can record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs.	I can present the same data in different ways in order to help with answering the question.	I can discuss whether other evidence e.g. from other groups, secondary sources and my scientific understanding, supports or refutes their answer.	In my conclusions, I can: identify causal relationships and patterns in the natural world from my evidence
Concept Flashback (previous phase or earlier that year)		Electricity Y5/6: 5. <a href="https://wordwall.net/resource/2898861/science/electricity-vocabulary-year-6">https://wordwall.net/resource/2898861/science/electricity-vocabulary-year-6</a> 6. Draw a working circuit that would light up a single light bulb and label this. 7. Define component and give an example	Light Y5/6 1. <a href="https://wordwall.net/resource/2862597/science/light-quizz-year-6">https://wordwall.net/resource/2862597/science/light-quizz-year-6</a> 2. <a href="https://wordwall.net/resource/2972373/science/the-structure-of-the-eye-year-6">https://wordwall.net/resource/2972373/science/the-structure-of-the-eye-year-6</a> 3. Define transparent, opaque and translucent	Forces Y5/6 1. <a href="https://wordwall.net/resource/2918054/science/forces-vocabulary-year-5">https://wordwall.net/resource/2918054/science/forces-vocabulary-year-5</a>	Animals including humans Y3/4 (Skeleton) 1. <a href="https://wordwall.net/resource/28877349/biology/skeleton-quizz">https://wordwall.net/resource/28877349/biology/skeleton-quizz</a> 2. Define balanced diet	Plants Y3/4 1. <a href="https://wordwall.net/resource/16164020/science/flowers-revision">https://wordwall.net/resource/16164020/science/flowers-revision</a> 2. Define pollination
Review/ Revisit	Low Stakes Quiz on Kahoot. Include: - digestive organs	1. Gaps in knowledge from revisit lesson to address any gaps	 Use the scenarios to determine the lifecycle stage.	1. Gaps in knowledge from revisit lesson to address any gaps 2. gestation period: reading a graph	1. Gaps in knowledge from revisit lesson to address any gaps 2. foetal development	1. Gaps in knowledge from revisit lesson to address any gaps 2. puberty and organising statements



Read	- what food types there are.	Throughout and secondary resources	Table and information packs.	Reading the statements when grouping	Puberty (page 19 in S2 science book)																																																										
Teach		<p><a href="https://explorify.uk/en/activities/what-if/the-average-lifespan-of-a-human-was-200">https://explorify.uk/en/activities/what-if/the-average-lifespan-of-a-human-was-200</a></p> <p>Use this link as a lesson stimulus – What happens if humans live till they are 200? Children sort pictures to show lifecycle of a human. Discuss how they knew this. Discuss bodily changes that occur during this time. Bodily changes that occur at each cycle.</p>	What gestation periods are – teach the human gestation period and examples of different animals.	What is a fetus? How an egg is fertilised and the process of fertilisation and the moment of conception. Look at the basic develop of a foetus and recap the human gestation period.	What puberty is and the age this at. <a href="http://www.bbc.co.uk/1/health/2012/08/120816_bbc_puberty_videos">Teen species</a> from www.bbc.co.uk <a href="http://www.bbc.co.uk/1/health/2012/08/120816_bbc_puberty_videos">BBC puberty videos – use as appropriate</a> from www.bbc.co.uk <a href="http://www.dkfindout.com/1/health/2012/08/120816_bbc_puberty_videos">Adolescence</a> from www.dkfindout.com <a href="http://www.nhs.uk/1/health/2012/08/120816_bbc_puberty_videos">Stages of puberty</a> from www.nhs.uk	What happens as age. Look at some graphs and what they show about old age. <a href="http://www.theguardian.com/1/health/2012/08/120816_bbc_puberty_videos">Nelson Mandela: a life in pictures</a> , <i>The Guardian</i> What changes have you noticed? Discuss these observations																																																									
Practice		Lifecycle of a human ordering. Discussion within the lesson.	Drawing the bar graph – using the information. <table border="1" data-bbox="982 632 1279 951"> <thead> <tr> <th>Animal</th> <th>Gestation (in days)</th> <th>Average life span (in years)</th> </tr> </thead> <tbody> <tr><td>Human</td><td>267</td><td>75</td></tr> <tr><td>African elephant</td><td>640</td><td>60</td></tr> <tr><td>Tiger</td><td>100</td><td>25</td></tr> <tr><td>Giraffe</td><td>450</td><td>25</td></tr> <tr><td>Chimpanzee</td><td>237</td><td>45</td></tr> <tr><td>Wolf</td><td>69</td><td>16</td></tr> <tr><td>Grey squirrel</td><td>44</td><td>6</td></tr> <tr><td>Pig</td><td>113</td><td>13</td></tr> <tr><td>Hamster</td><td>16</td><td>3</td></tr> <tr><td>Dog</td><td>63</td><td>12</td></tr> <tr><td>Cat</td><td>62</td><td>14</td></tr> <tr><td>Mouse</td><td>25</td><td>2</td></tr> <tr><td>Horse</td><td>337</td><td>20</td></tr> <tr><td>Humpback whale</td><td>350</td><td>50</td></tr> <tr><td>Fox</td><td>52</td><td>10</td></tr> <tr><td>Dolphin</td><td>276</td><td>20</td></tr> </tbody> </table>	Animal	Gestation (in days)	Average life span (in years)	Human	267	75	African elephant	640	60	Tiger	100	25	Giraffe	450	25	Chimpanzee	237	45	Wolf	69	16	Grey squirrel	44	6	Pig	113	13	Hamster	16	3	Dog	63	12	Cat	62	14	Mouse	25	2	Horse	337	20	Humpback whale	350	50	Fox	52	10	Dolphin	276	20	Group the statements into the weeks, biological changes and pictures. What happens at each stages.  Challenge: what points and milestones do you think are key moments in pregnancy.	In groups annotate a blank template of a female and male body during puberty and use the videos to illustrate any changes. Magpie ideas from other groups and class share (mini reflection point).	Give each table a scenario and some information that is relevant and they are to create a card about their scenario and then one stray their ideas and show what happens as we age on different levels. <table border="1" data-bbox="2389 724 2715 1066"> <tr> <td>Find out what happens to hair as we age</td> <td>Find out what happens to our eyesight as we age</td> </tr> <tr> <td>Find out what happens to our skin as we age</td> <td>Find out what happens to our hearing as we age</td> </tr> <tr> <td>Find out what happens to our bones as we age</td> <td>Find out what happens to our immune system as we age</td> </tr> </table>	Find out what happens to hair as we age	Find out what happens to our eyesight as we age	Find out what happens to our skin as we age	Find out what happens to our hearing as we age	Find out what happens to our bones as we age	Find out what happens to our immune system as we age
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Apply		In groups, children are to create a visual timeline of the human lifecycle, annotating it with key biological changes that occur. Children to have supplementary resources to aid additional research and investigation.  How do human lifecycles compare to that of a chimpanzee – discussion.	Write their findings up. <table border="1" data-bbox="982 1119 1279 1438"> <thead> <tr> <th>Animal</th> <th>Gestation (in days)</th> <th>Average life span (in years)</th> </tr> </thead> <tbody> <tr><td>Human</td><td>267</td><td>75</td></tr> <tr><td>African elephant</td><td>640</td><td>60</td></tr> <tr><td>Tiger</td><td>100</td><td>25</td></tr> <tr><td>Giraffe</td><td>450</td><td>25</td></tr> <tr><td>Chimpanzee</td><td>237</td><td>45</td></tr> <tr><td>Wolf</td><td>69</td><td>16</td></tr> <tr><td>Grey squirrel</td><td>44</td><td>6</td></tr> <tr><td>Pig</td><td>113</td><td>13</td></tr> <tr><td>Hamster</td><td>16</td><td>3</td></tr> <tr><td>Dog</td><td>63</td><td>12</td></tr> <tr><td>Cat</td><td>62</td><td>14</td></tr> <tr><td>Mouse</td><td>25</td><td>2</td></tr> <tr><td>Horse</td><td>337</td><td>20</td></tr> <tr><td>Humpback whale</td><td>350</td><td>50</td></tr> <tr><td>Fox</td><td>52</td><td>10</td></tr> <tr><td>Dolphin</td><td>276</td><td>20</td></tr> </tbody> </table>	Animal	Gestation (in days)	Average life span (in years)	Human	267	75	African elephant	640	60	Tiger	100	25	Giraffe	450	25	Chimpanzee	237	45	Wolf	69	16	Grey squirrel	44	6	Pig	113	13	Hamster	16	3	Dog	63	12	Cat	62	14	Mouse	25	2	Horse	337	20	Humpback whale	350	50	Fox	52	10	Dolphin	276	20	Guide for pregnant woman about the changes and stages of pregnancy. - what will they need to know? - key events and weeks when these occurrences happen	Venn diagram: what changes to females and males experience during puberty? - share ideas with somebody else.  Children to use their annotated diagrams to fill in their venn diagram	Looking at the graphs: How does our body change as we age?  <b>1</b> Relationship between Age and Bone Mass over time  <b>2</b> Studying cognitive abilities in old age						
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African elephant	640	60																																																													
Tiger	100	25																																																													
Giraffe	450	25																																																													
Chimpanzee	237	45																																																													
Wolf	69	16																																																													
Grey squirrel	44	6																																																													
Pig	113	13																																																													
Hamster	16	3																																																													
Dog	63	12																																																													
Cat	62	14																																																													
Mouse	25	2																																																													
Horse	337	20																																																													
Humpback whale	350	50																																																													
Fox	52	10																																																													
Dolphin	276	20																																																													
Reflect		Share ideas and ‘Magpie’ any information from other groups which they might not have.	Share conclusions – if your partner makes a valid point add it to your conclusion in editing pen.	Why can a baby survive outside the womb from 26 weeks?	What if puberty didn’t happen?	Share graph findings and comparisons.																																																									
End of block	What would happen to the human lifecycle if humans were to live to be 200? - children can present their predications and justifications in a manner they see fit and appropriate.																																																														

**Medium Term Plan: Animals including humans Cycle B Y5/6**

Enquiry Type:	Working Scientifically Concepts:	Previous Scientific Vocabulary	New Scientific vocabulary
<ul style="list-style-type: none"> <li>Comparative and fair testing</li> <li>Pattern seeking</li> <li>Research using secondary sources</li> <li>Identifying, classifying and grouping</li> <li>Observing over time.</li> </ul>	<ul style="list-style-type: none"> <li>Asking questions</li> <li>Making observations and measuring them</li> <li>Engaging in practical enquiry</li> <li>Recording and presenting evidence</li> <li>Answering questions and concluding</li> <li>Evaluating and predicting</li> <li>Communicating findings.</li> </ul>	<ul style="list-style-type: none"> <li>puberty</li> <li>gestation</li> <li>womb</li> <li>growth</li> <li>reproduce</li> <li>sperm</li> <li>egg foetus</li> <li>fertilisation</li> </ul>	<ul style="list-style-type: none"> <li>heart</li> <li>lungs</li> <li>cardiovascular</li> <li>veins</li> <li>arteries</li> <li>capillaries</li> <li>oxygenated</li> <li>deoxygenated</li> <li>transportation</li> <li>blood vessels</li> </ul>
Previous Learning End Point Assessment in this concept:	Previous Learning End Point Assessment in working scientifically concepts:	End Point Assessment Statements:	
<b>Human Life Cycle</b> 1. I can identify the changes as humans develop to old age 2. I can describe the changes as humans develop to old age. 3. I can explain why these biological changes occur (e.g. women’s hips grow wider to prepare for pregnancy)	I can draw on prior knowledge to help answer a question. I can make systematic and careful observations. I can use a range of equipment for measuring length, time, temperature and capacity. I can record my measurements e.g. using tables, tally charts and bar charts (given templates when needed). I can interpret the data to generate simple comparative statements based on my evidence. I can begin to identify naturally occurring patterns and causal relationships.	<b>Circulatory and Respiratory System:</b> 1. I can identify and name the main parts of the human circulatory system (cardiovascular and respiratory) 2. I can describe the functions of the heart, blood vessels and blood 3. I can explain the importance of a healthy lifestyle and understand a few ways of achieving this. 4. I can recognise the impact of diet, exercise, drugs and lifestyle (e.g. sedentary lifestyle, smoking, alcohol and drug consumption – including caffeine) on the way their bodies function 6. I can explain the impact of an unhealthy lifestyle on human bodily function. 7. I can describe the ways in which nutrients and water are transported within animals, including humans.	

	Revisit of knowledge short Afl lesson	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
<b>Learning Question</b>	What can I remember about how humans grow old?	Can you identify and name the main parts of the human circulatory system?	Can you describe the functions of the heart, blood vessels and blood?	Can you describe the ways in which nutrients and water are transported within animals including humans?	How does the length of time we exercise for affect our heart rate?	How do our lifestyle choices impact on our bodily function?
<b>Enquiry Type</b>		Identifying, classifying and grouping.	Identifying, classifying and grouping.	Research using secondary sources	Comparative and fair test	Pattern seeking
<b>Conceptual Knowledge</b>	Prior units end point assessment	I can identify and name the main parts of the human circulatory system (cardiovascular and respiratory).	I can describe the functions of the heart, blood vessels and blood.	I can describe the ways in which nutrients and water are transported within animals, including humans.	I can explain the importance of a healthy lifestyle and understand a few ways of achieving this. I can recognise the impact of diet, exercise, drugs and lifestyle (e.g. sedentary lifestyle, smoking, alcohol and drug consumption – including caffeine) on the way their bodies function I can explain the impact of an unhealthy lifestyle on human bodily function.	I can explain the importance of a healthy lifestyle and understand a few ways of achieving this. I can recognise the impact of diet, exercise, drugs and lifestyle (e.g. sedentary lifestyle, smoking, alcohol and drug consumption – including caffeine) on the way their bodies function I can explain the impact of an unhealthy lifestyle on human bodily function.
<b>Working Scientifically</b>		I can present the same data in different ways in order to help with answering the question.	I can talk about how scientific ideas change due to new evidence being gathered.	I can communicate my findings to an audience using relevant scientific language and illustrations.	I can select a suitable measuring method and therefore equipment to give the most precise results (e.g. ruler, tape measure or force meter). I can carry out fair tests, recognising and controlling variables. I can look for patterns and relationships using a suitable sample.	I can decide how to record and present evidence. I can talk about how scientific ideas change due to new evidence being gathered. I can communicate my findings to an audience using relevant scientific language and illustrations.
<b>Concept flashback (prior phase or earlier in the year)</b>		Animals including humans (human life cycle) Y5/6 1. <a href="https://wordwall.net/resource/5131276/science/human-life-cycle">https://wordwall.net/resource/5131276/science/human-life-cycle</a> 2. Define gestation period	Electricity Y5/6: 8. <a href="https://wordwall.net/resource/2898861/science/electricity-vocabulary-year-6">https://wordwall.net/resource/2898861/science/electricity-vocabulary-year-6</a> 9. Draw a working circuit that would light up a four light bulbs. 10. Define voltage	Living things Y3/4: 1. <a href="https://wordwall.net/resource/5776745/science/living-things-and-their-habitats">https://wordwall.net/resource/5776745/science/living-things-and-their-habitats</a> 2. Define habitat	Forces Y5/6 <a href="https://wordwall.net/resource/2918054/science/forces-vocabulary-year-5">https://wordwall.net/resource/2918054/science/forces-vocabulary-year-5</a>	Light Y5/6 4. <a href="https://wordwall.net/resource/2862597/science/light-quiz-year-6">https://wordwall.net/resource/2862597/science/light-quiz-year-6</a> 5. <a href="https://wordwall.net/resource/2972373/science/the-structure-of-the-eye-year-6">https://wordwall.net/resource/2972373/science/the-structure-of-the-eye-year-6</a> 6. Define optic nerve

<b>Review/ Revisit</b>	Low Stakes Quiz on Kahoot. Include: - stages. of human Lifecycle - key facts about each stage	1. Gaps in knowledge from revisit lesson to address any gaps 2. Previous lesson (order human cycle and one fact about each stage)	1. Gaps in knowledge from revisit lesson to address any gaps 2. Previous lessons (human life cycle and label the heart)	1. Gaps in knowledge from revisit lesson to address any gaps 2. Previous lessons (label the heart, functions of the heart, blood vessels and blood)	1. Gaps in knowledge from revisit lesson to address any gaps 2. Previous lessons (label the heart, functions of the heart, blood vessels and blood) 3. Independent, dependent and control variables	1. Gaps in knowledge from revisit lesson to address any gaps 2. Previous lessons
<b>Read</b>		Throughout and on flip for explanations	Throughout Quiz Definitions of others	Throughout Each other's write ups.	Throughout Results and findings Information on taking heart rate and calculating it.	Throughout Graphs
<b>Teach</b>		Look at the diagram of the circulatory system and teach what each part is and how blood flows through the human body.	<a href="https://www.bbc.co.uk/bitesize/topics/zwdr6yc/articles/zs8f8mn">https://www.bbc.co.uk/bitesize/topics/zwdr6yc/articles/zs8f8mn</a>  Watch the video and complete the fill in the gaps interactive activity.  Introduce children to the function of parts of the system – heart, blood and blood vessels. Look at what makes up our blood.	How nutrients and water are transported around humans.	Misconceptions in variables. Introduce the question and explore what the independent, dependent and control variables will be. How will we make this a fair test?  How to find heart rate – neck or wrist. Ch to count their resting pulse/heart rate and record on their whiteboard. Count for 20 seconds and x3 for example.	Discuss what we learnt about exercise last week. Sorting activity, Discuss different 'drugs' and the impact on our bodies. Focus on smoking and look at a life expectancy.
<b>Practice</b>		Children to look at different diagrams and compare where each part of the human circulatory system is.	Children to generate their own definitions with a partner on whiteboards for the heart, blood vessels and blood.	Discussion. Linking to the blood vessels and prior knowledge.	Discussion. Deciding on how they will measure the LENGTH of time exercising and what exercising means – what will do they? Skipping, running, star jumps, etc.	Sort pictures into drugs and those that aren't. Why do they think this?
<b>Apply</b>		Using playdough children are to recreate the structure of the heart and lungs and using the different colours show deoxygenated and oxygenated blood. Children to use toothpicks and paper to then label each section of the human heart	Using a photo from last lesson with a clearly labelled heart with playdough, children are to annotate this with what they function of the heart is. Then, they will have statements about the lungs which are true and false, they need to decipher which are true and annotate their picture with this. Label which blood vessels are arteries and veins and whether they are deoxygenated or oxygenated. Challenge: annotate the composition of blood.	Draw around a person (Lifesize model) and use pencils, string and glue to recreate blood vessels. They must include the main organs involved and see if they can correctly position these on the Lifesize models. Challenge: include kidneys and intestines.  Children to write up what their Lifesize model shows in their books.	Children to decide, after discussion, what they are going to investigate and then collate their recordings (independently as a group).  Write a conclusion about what they find.	Focus on smoking and look at a life expectancy. Children to infer this data and what biological impact this has on the human body. How has this research impacted on society as time has moved on?
<b>Reflect</b>		Share ideas and explain why they have used red and blue playdough.	Orally share definitions after practice stage – address any misconceptions. Share annotated diagrams with a partner and talk them through it.		Why might heart rate differ between humans? – challenge.	Share finding and what we now know about lifestyle choices on bodily functioning. Use an 'if' question. If there were no apples ... If people said chocolate was healthy ... If calories didn't exist.