

Term	Autumn	Spring One	Spring Two	Summer 1	Summer 2
Knowledge	Animals including humans	Living things and their habitats	Light	Electricity	Evolution Inheritance
Scientific enquiry	Comparative / pattern seeking Observing over time	Classifying Researching	Comparative / pattern seeking	Comparative / pattern seeking	Researching Observing over time
Working scientifically skills	To present results To draw conclusions	To ask scientific questions To present results	To make a prediction To measure accurately To evaluate an investigation	To plan an enquiry To gather and record results	To ask scientific questions To present results
Building science capital	Animals in local environment	Marine biology workshop (Marine Conservation Society) virtualfieldtrips.org (paid) Veterinarian visit/talk World Seed bank	Science Experiments	Visitor (e.g. electrician)	External visitor with Science workshop
Composite knowledge	What are the main parts of the human circulatory system? What are the functions of the heart, blood vessels and blood?	How are living things classified? How can I classify plants and animals based on specific characteristics?	How does light travel? How do we see things? How are shadows formed?	What are the main components of a circuit? What are the correct symbols to represent the components of a circuit? What is the effect of changing components in an electrical circuit? How do components function? Can I compare and give reasons for variations on how components function?	What is the process of evolution by natural selection? What features are inherited?

Component knowledge	-identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood -recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function -describe the ways in which nutrients and water are transported within animals, including humans	-describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals -give reasons for classifying plants and animals based on specific characteristics	recognise that light appears to travel in straight lines 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 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 use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	-associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit -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 -use recognised symbols when representing a simple circuit in a diagram	-recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago -recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents -identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution Understand and explain the body changes for reproduction (SRE) Understand and explain how sexual intercourse, conception and pregnancy are linked. (SRE)
Vocabulary	Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration	Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects,	Refraction, Reflection, Light, Spectrum, Rainbow, Colour,	Lamp, Voltage, Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Cell, Components	Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics SRE vocabulary (conception, pregnancy, sexual intercourse, womb)
Links to prior knowledge	Yr 1 ,2,3,4,5	Yr 2, 4, 5	Year 3	Yr 4	YR5- Animals including humans
Key knowledge for assessment	identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	Can children classify living things into groups according to characteristics, differences, etc.	How does light travel? How do we see things?	Can children name and use the correct symbols to represent the components of a circuit?	recognise that living things have changed over time and that fossils provide information about living things that

	recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function	Can children explain their reasoning for classifying different plants and animals based on specific characteristics?		Can children explain the effect of changing components in an electrical circuit? Can the children compare and give reasons for variations on how components function?	inhabited the Earth millions of years ago recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
Cross-curricular links	Dracula, blood!			WW2 topic	Earth matters topic <u>SRE – taught in Summer Term</u> <u>Composite knowledge</u> How and why does the body change to prepare for reproduction? (SRE) How can people start a family? (SRE)

Half Termly Planning

Autumn 1 Animals including humans	Lesson Objective	Main Task	Resources
Lesson 1	No lesson – First day back at school.		
Lesson 2	LO: Recall prior knowledge about the main body parts and internal organs.	Create a 'Crocodile Creek' game to revise key features of the skeletal system, muscular system and digestive system.	Crocodile Creek game template. Systems in the body help sheet.
Lesson 3	No lesson – Queen's Funeral.		
Lesson 4	LO: Make a model of blood.	Children to make a model of blood. As they add each component, they need to read the accompanying facts.	Water bottle Yellow food colouring Pink and white marshmallows Small gold stars Cheerios (dyed red) Salt Components of blood help sheet.
Lesson 5	LO: Use scientific knowledge to identify similarities and differences.	For children's model of blood, they need to think carefully about each component and explain the following: 1) Why is this a good representation? 2) Why is this not a good representation?	Task All – Pictures Scaffold (20%) - Sentence starters using Widgeit. Task (Below 20%) – Comparison pictures using Widgeit. Children to write what they see is the same and different.
Lesson 6	LO: Explain how the human circulatory system works.	Using numbered diagrams of the human circulatory system with key vocabulary, children to do the following: 1) Practise a spoken explanation. 2) Write a written explanation.	Task All – Numbered diagrams of the human circulatory system with key vocabulary. Scaffold (20%) – Definitions of key vocabulary using Widgeit. Task (Below 20%) – Using Widgeit, children to sequence human circulatory system sentences and answer simple questions.
Lesson 7	No lesson – Autumn 1 SATs Assessments.		
Lesson 8	LO: Explain why heart valves are so important for blood flow.	1) Children to label a diagram of the heart and circle the four heart valves. 2) Children to explain why heart valves are important for blood flow using causal relationships.	Task All – Heart picture and checklist. Scaffold (20%) – Instructions written using Widgeit. Task (Below 20%) – Children to circle four heart valves and sequence how heart valves work.

Autumn 2 Animals including humans	Lesson Objective	Main Task	Resources	Vocabulary
Lesson 1	No lesson – School journey.			
Lesson 2	LO: Ask scientific questions and use causal relationships to answer them.	1) Discuss data on the heart rates for different animals, ages and levels of fitness. 2) Children to think of a scientific question based on the data. 3) Children to answer their question using causal relationships.	Task All – Data chart Scaffold (20%) – Causal Relationships and Key Vocabulary Prompt Sheet Task (Below 20%) – Using Widgit, children to write a question based on the data, and sequence a causal relationship.	
Lesson 3	LO: Recognise the impact of diet on the way our bodies function.	1) As a class, practise verbally explaining which person's daily meals (Person 1 or 2) is the healthiest (a more balanced diet) and why. 2) Working with their Talk Partner, children to decide which person's daily meals (Person 3 or 4) is the healthiest (a more balanced diet) and why. 3) Extension – Comparing Person 5 and Person 6.	Task All – Daily Meals with analysis prompts. Scaffold (20%) – Key Vocabulary Reminders. Task (Below 20%) – Working with a Talk Partner to complete analysis. Children to complete sentence with the phrase: 'healthier' or 'not healthier': Person 3's daily meals are _____ than Person 4's daily meals.	
Lesson 4	LO: To recognise the impact of drugs on the circulatory system.	1) Children to research the impact of nicotine, caffeine, alcohol has on the body. Children to draw their own conclusions on the effects on these drugs by working in a group. Particular attention to be paid on the effect on the circulatory system. 2) Children to present their findings in a table within their science books.		drugs, lifestyle, addiction, disease, medicine, alcohol, cigarettes, stimulant, depressant, analgesic, hallucinogen
Lesson 5	LO: Plan a scientific enquiry based on exercise.	1) Explain Post-it Note planning and discuss variables, variable to observe/measure and fair testing. 2) Children to decide on their chosen investigation by moving over variable 'to change' and variable 'to observe/measure'.	Working in pairs, children to complete Post-it Note planning. Task (Below 20%) – Pre-written Post-Its to move.	comparative fair test, control, variable, exercise, heart rate, pulse

		The remaining variables will be kept the same ensuring a fair test.		
Lesson 6	LO: To investigate the effect exercise has on heart rate. Key skills: Fair test and writing a prediction.	1) Children to write up investigation: The variable I will change is... I will observe... I will keep the same... 2) Write a prediction using scientific vocabulary. 3) Children practise taking pulse in preparation for investigation.		exercise types, bone strengthening muscle strengthening, heart rate, respiration, respire, release energy, oxygen, glucose, muscles
Lesson 7	No lesson – Snow Day			

Animals including Humans Topic Pointers for Next Year:

- 1)** Hopefully, you'll have more Monday lessons as missed lessons due to Queen's funeral, Snow day, etc.
- 2)** For the lesson with the LO: Recognise the impact of diet on the way our bodies function, change task so it matches LO.
- 3)** Time allowing, teach the following content:
 - Recognise the impact of lifestyle on the way their bodies function.
 - Describe the ways in which nutrients and water are transported within animals, including humans.
 (See folder titled: 'Content Ran Out of Time Teaching' for lesson ideas.)

Spring 1	Lesson Objective	Main Task	Resources	Vocabulary
Lesson 1 Brought forward last lesson from half term.	LO: To investigate the effect exercise has on heart rate. Key skills: Practical and interpreting results.	1) Complete practical. 2) Draw results table and complete for results. 3) Children to work out the difference: - Between resting heart rate and squats. - Between resting heart rate and star jumps. The greater the difference, the more heart rate increased. 4) Explain if prediction was correct or incorrect and recap the science. 5) Do children have any ideas for an extension to this investigation?	If indoor (Wed afternoon): Muscle strengthening – sit ups or squats Bone strengthening – star jumps If outdoor (Mon afternoon): Muscle strengthening – squats Bone strengthening – jogging on the spot or star jumps	comparative fair test, control, variable, exercise, heart rate (bpm), respiration, respire, release energy, oxygen, glucose, muscles
Spring 1 Living things and their habitats	Lesson Objective	Main Task	Resources	Vocabulary

Lesson 1	LO: Recall prior knowledge about classifying living things.	1. Complete the Odd One Out Challenge. Children need to explain which animal is the Odd One Out and why, using the Classification Chart. 2. Children underline scientific vocabulary.	Classification chart and task sheet. LA instructions.	classifying (groups), characteristics (special qualities), similar features, organisms, vertebrates (such as fish, amphibians, reptiles, birds and mammals), invertebrates (such as insects, spiders, snails, worms), warm-blooded, cold-blooded
Lesson 2	LO: To create a branching classification key.	Children create a branching classification key for a selection of sweets.	For a class of 30. A4 plain paper (x15) Liquorice Allsorts (x2) Haribo or other jelly sweets (x2) Smarties (x2) Fruit Pastilles (x2) (Double for two classes.)	classifying classification key branching classification key specific features/characteristics common observable characteristics sorting grouping justifying
Lesson 3	LO: To understand Linnaeus's classification system.	1. Children create and illustrate a classification route for the <i>Sciurus vulgaris</i> (red squirrel). 2. Children to think of a mnemonic to remember the 7 levels of Linnaeus's classification system.	Task sheet (one per child)	Carl Linnaeus classifying Kingdom Phylum Class Order Family Genus Species
Lesson 4	LO: To use classification charts and keys to identify plant groups.	1. Children use the plant classification key to identify the plant group each plant belongs to. Plants to sort: 1. Cedar 2. Hart's tongue 3. Carnation 4. Common haircap 2. Children justify why the plant belongs to that specific group, underlining key vocabulary.	Task sheet (one between two)	classification chart classification key plants seed reproduce flowering conifers ferns mosses pollen cones spores roots rhizoids
Lesson 5				

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Spring 2	Lesson Objective	Main Task	Resources
Lesson 1	LO: To use correct symbols when representing a simple circuit	Children to draw representations of circuits in their books using the correct symbols.	Diagrams of circuits (real life)
Lesson 2	LO: To investigate the effect of changing components within a circuit	Children to investigate which circuit will allow the bulb to be brighter. They will use diagrams to make different circuits to investigate.	Wires, batteries, bulbs, pictures of different circuits using scientific symbols.
Lesson 3	LO: To plan an enquiry choosing which variables to control	Children to plan an enquiry to answer the questions about whether wire length affects the components within a circuit.	Wires, batteries, bulbs, buzzers.
Lesson 4	To design a circuit for a specific purpose	Children to design an intruder alarm, based on their knowledge of insulators and conductors.	Wires, batteries, buzzers, tin foil, wooden pegs, paper clips, cards
Lesson 5	To design a circuit for a specific purpose (continue)	Children to draw their diagram of their intruder alarm.	
Lesson 6	ASSESSMENT		
Lesson 7			
Lesson 8			

Light				
Summer 1	Lesson Objective	Main Task	Resources	Vocabulary
Lesson 1	LO: To be able to use scientific evidence to support or disprove an idea	Children to see if they can prove the fact that light travels in a straight line by shining line through holes in paper and changing the angles to test the theory.	Torches, card	light
Lesson 2	LO: To use results from an observation to make conclusion	Children to test different materials to see which item is the most reflective. Children then try to explain why that surface is more reflective and draw conclusions from this.	Books, mirrors, glasses, foil, torches	Reflection
Lesson 3	LO: To make a prediction based on scientific knowledge.	Children to make a prediction regarding what will happen to an arrow when put in front a glass of water. The children should then carry out the experiment and see if they were correct.	Paper (with arrows on them), glasses	Refraction
Lesson 4	LO: To use plan an enquiry to answer a scientific question	Children to investigate what effect the distance between the light source and an object has on the size	Transparent lens, opaque object, torch, paper	Opaque Transparent

		of the shadow. Children should first discuss independent, dependent and controlled variable and plan enquiry. People then to record results in self-made table.		shadow
Lesson 5	Assessment	Children to answer quiz style questions to consolidate learning	Quiz	
Lesson 6				
Lesson 7				
Lesson 8				

Evolution and Inheritance			
Summer 2	Lesson Objective	Main Task	Resources
Lesson 1	LO: To identify how animals and plants adapt to their habitats	Children pick 4 animals/plants and comment on how they have adapted to suit their habitat. Children comment on physical and behavioural features too.	Vocab sheet Images of animals/plants
Lesson 2	LO: To understand natural selection in animals and plants	Children look at definition of natural selection and evolution. Introduce Charles Darwin's theory of evolution Look at 2 videos and examples of natural selection	Videos Pictures of animals Pictures of plants
Lesson 3	Science Week activity	Study and research a famous scientist to put on display	Key information
Lesson 4	LO: To understand what inheritance is	Children look at similarities and differences between family and living things with the same parents. Look at characteristics and variation. Children create a family tree in book and look at the characteristics that were passed down to them and their siblings – what is the same, what is different	Define key words Images Videos
Lesson 5			
Lesson 6			
Lesson 7			
Lesson 8			

