Science – Year 6 – Medium Term Plan
Autumn 1: Living things: classifying big and small.

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
One: Carl Linnaeus and classification	To explain how organisms are classified using the Linnaean system.	• I can define the term 'organism'. • I can describe the work of Carl Linnaeus. • I can organise a diagram to show the Linnaean system.	- 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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - Identifying scientific evidence that has been used to support or refute ideas or arguments.	- **binomial system** - **characteristic** - **classify** - **life processes** - **Linnaean system** - **organism**	- Potted plant (optional – see Main event). - Magnifying glasses (optional – see Main event). - Scissors (one between two). - Glue sticks (one between two). -
Two: Cold-blooded vertebrates	• To classify the cold-blooded vertebrate groups using their common characteristics.	• I can define the term 'vertebrate'. • I can name the vertebrate groups. • I can describe the characteristics of fish, amphibians and reptiles. • I can use a branching key to identify the cold-blooded vertebrates.	• 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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • Recording data and results of increasing complexity using scientific diagrams and labels, classification	• **vertebrate** • **fish** • **amphibian** • **reptile** • **classification key** • **cold-blooded**	- No extra resources.
Three: Warm-blooded vertebrates	• To classify the warm-blooded vertebrate groups using their common characteristics.	• I can describe the characteristics of birds and mammals. • I can compare the characteristics of vertebrate groups.	• 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. **Working scientifically**	• **bird** • **mammal** • **warm-blooded**	- Scissors (one each). - Glue sticks (one each).

		• I can use a classification key to identify and classify vertebrat	Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys.		
Four: To classify invertebrates	• To classify invertebrates.	• I can define the term 'invertebrate'. • I can describe the characteristics of worms, snails, spiders and insects. • I can compare the characteristics of the invertebrate groups. • I can use a classification key to identify and classify invertebrates.	• 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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys.	• **classification key** • **exoskeleton** • **insect** • **invertebrate** • **snail** • **spider (arachnid)** • **worm**	- The children's named copies of the *Activity: Vertebrate characteristics table* from Lesson 3. - Mini whiteboards and board pens (one each). - Clay or play dough (one large handful per child). - Cocktail sticks (one each). -
Five: Plants	• To describe how the plant kingdom is organised (based on shared characteristics). • Working scientifically: To produce a working classification key.	• I can name the plant groups and describe their characteristics. • Working scientifically: I can organise the layout of a classification key. • Working scientifically: I can design appropriate questions for classification keys.	• 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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys.	• **conifer** • **fern** • **flowering plant** • **moss**	- Jar or plastic cup (one each). - White sticky labels (one each) or permanent markers (one per group). - Scissors (one per child). - Craft materials (see Teacher guidance). - Link: BBC Life - Plants on VideoLink -
Six: Micro-organisms	• To describe and classify micro-organisms	• I can define the term 'micro-organism'. • I can name some micro-organisms.	- Describe how living things are classified into broad groups according to common observable characteristics and based on	- **micro-organism** - **microscopic** -	- Mini whiteboards and pens (one between four s see Recap and recall).

		• I can classify micro-organisms using a classification key.	similarities and differences, including micro-organisms, plants and animals. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - Recording data and results of increasing complexity using scientific diagrams and labels, classification keys. -		

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
One: The pathway of light.	• To describe the pathway of light. • Working scientifically: To use evidence to form conclusions.	- I can compare sources of light. - I can describe how light travels. - Working scientifically: I can make observations about the properties of light. - Working scientifically: I can use my observations as evidence to support conclusions about light.	• Recognise that light appears to travel in straight lines. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments.	- **light ray** - **light source** - **luminous** - **straight**	- Equipment for 'What do we need to see?' investigation (one between two s. see Main event): o 1 cardboard tube; o 1 small object, such as a coin or die. - Equipment for 'Can light bend?' investigation (one between two s. see Main event): o 1 short length of hose or narrow, opaque tubing; • 1 torch with a single light source or low-powered laser; o A6-sized card with a hole pierced through; o whiteboard; o 2 bulldog clips to help support the card upright (optional). - Equipment for 'Can light bend?' teacher demonstration (one set): o 1 torch with a single light source or low-powered laser; o 3 pieces of card with a hole pierced through in the same location, approximately a third from the top; o whiteboard; o 6 bulldog clips to help support the card upright (optional). - Rulers (one each).
Two: See the light.	• To describe how we see. • Working scientifically: To draw scientific diagrams.	- I can describe how we see luminous objects. - I can describe how we see non-luminous objects. - I can explain how the eye is protected from light. - Working scientifically: I can draw ray diagrams. -	• 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. **Working scientifically**	- **iris** - **non-luminous** - **protect** - **pupil** - **ray diagram** - **reflective** - **reflective (shiny)**	- Whiteboards and pens (one each). - Rulers (one each). - Modelling light reflection equipment (one set between four s. see Main event): 1 torch; 1 mirror;

			Pupils should be taught to use the following practical scientific methods, processes and skills: • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Identifying scientific evidence that has been used to support or refute ideas or arguments.		2 m of string or ribbon; 1 toy with eyes, such as a teddy bear. Modelling the lens (teacher demonstration): 1 plain glass filled with water; an arrow drawn on paper in marker or felt tip pen. - Link: How does the human eye work?
Three: Measuring shadows	• To explain how shadows change. • Working scientifically: To pose questions.	- I can recall factors that affect the size of a shadow. - I can describe how the distance between an object and the surface its shadow is cast on affects the size of the shadow. - I can use ray diagrams to explain why shadows change size. - I can use ray diagrams to explain why the shape of a shadow matches the object that cast it. - Working scientifically: I can pose testable questions in response to observations. -	• Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.	• **cast** • **opaque** • **shadow**	• Shadow challenge equipment (one set for each table group s see Attention grabber): o1 torch; o an identical object, such as a toy, a pencil standing in modelling clay or a stack of counting cubes (each table should have the same); o coloured acetate (alternatively cut up coloured translucent folders). • Modelling shadows (teacher demonstration s see Attention grabber): o1 torch; o1 football (or other simple-shaped object); o 2 m of string; o access to a whiteboard on the wall or a flipchart and a pen.

					• Measuring shadows equipment (one set per group of three): ○ opaque black card or paper; ○ sticky tape; ○ a lolly stick; ○ small ball of modelling clay; ○ 1 torch; ○ whiteboard; ○ 2 rulers (30 cm); ○ 2 bulldog clips to support the whiteboard to stand upright (optional). • Changing the shape of shadows equipment (one set per small group ≤ see Wrapping up): ○ 1 torch; ○ assorted shaped objects. • Link: Amazing shadow art by Kumi Yamashita
Four: Reflecting light	• To investigate what affects the angle of the reflected ray. • Working scientifically: To record results as a line graph.	- I can recall what happens to light when it reaches a smooth mirror surface. - I can identify the incoming and reflected rays. - I can describe the relationship between the angles of the incoming and reflected rays. - Working scientifically: I can record my measurements as a line graph. - Working scientifically: I can use my line graph to extrapolate data and make	• Recognise that light appears to travel in straight lines. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	- **extrapolate** - **incoming ray** - **mirror** - **optical fibre** - **reflected ray** - **relationship**	- Protractors (one each). - Whiteboards and pens (one between two). - Equipment for teacher demonstration of internal reflection (optional ≤ see Wrapping up): ○ a large plastic bottle filled with water;

		predictions about missing values. -	• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments.		○ something to pierce a hole in the bottle; ○ a laser pointer; ○ a bucket/container to catch the stream of water; ○ a fibre optic light (optional) -
Five: Making a periscope	To explain how a periscope works.	-I can use mirrors to make a working periscope. -I can describe the journey light makes through a periscope. -I can use ray diagrams to explain how a periscope works.	- 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.	- **periscope** - **trench**	- 2 small mirrors, preferably glass (per group of three). - Whiteboard and pen (one between three). - Periscope building materials (per group of three): ○ sticky tape; ○ glue dots or double-sided tape. - Periscope junk modelling materials (per group of three s see Adaptive teaching): ○ cuboid cardboard packaging; ○ sticky tape; ○ glue dots or double-sided tape. - Screens to create 'trenches' s optional.
Six: Using mirrors	• To explain how mirrors are helpful. • Science in action: To explore different jobs or inventions	- To recall a range of uses of mirrors and reflection. - To describe how a mirror is used to reflect light in different situations. - To explain how light is reflected using knowledge of light and reflection.	- 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.	**evaluate**	• Whiteboard and pen (one each s see Recap and recall). • Props for pupil performances (one set per small group): ○ 1 toy; ○ 2 m of string;

	that depend on reflection.	- Science in action: To recall various jobs or inventions that use mirrors and reflection. -	- 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.		○ 1 mirror; ○ 1 torch. • Link: Assessment s Science Y6: Light and reflection. • Link: Artist creates a mirror using glass and silver nitrate
Assessment:					

Science – Year 6 – Medium Term Plan

Spring 1- Living things: Evolution and inheritance.

Exploring variation and inheritance in different living things and how observations and fossil evidence have led to the theory of evolution.

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources

One: Variation	• To explain why there are differences within a species. **Working scientifically** • To group factors.	• I can define variation. • I can identify examples of variation. • I can recall the causes of variation. **Working scientifically** • I can group the causes of variation.	Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	- **characteristic** - **environment** - **environmental** - **gene** - **inherit** - **species** - **variation**	- A bunch of the same flowers, apples of the same variety or garden snails (optional). - Sticky notes (a few per table). - Whiteboards and pens (one between two). - Colouring pencils or highlighters (two each). - Link: BBC Earth - Charles Darwin's Galapagos Discovery on VideoLink.x - Link: The New York Times - A. R. Wallace: The other guy to discover natural selection
Two: Inheritance	To recognise the inheritance of characteristics in plants and animals.	- I can compare characteristics between individuals from the same species. - I can identify variation that is inherited. - I can recall that living things produce offspring of the same kind. - I can describe patterns of inheritance.	Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	- **breed (verb)** - **family tree** - **inheritance** - **offspring** - **parent (biological)** - **selective breeding**	- Whiteboards and pens (one each). - Link: BBC Teach - What is selective breeding?
Three: Adaptations	To explain why adaptation is necessary.	• I can recall what an adaptation is. • I can recognise that adaptations cannot be chosen. • I can describe key characteristics that would help an organism survive. • I can explain how an adaptation helps the organism to survive.	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	• **adaptation** • **habitat** • **survival**	• Whiteboards and pens (one each). • Dice (two between each pair of pupils). • Colouring pencils or highlighters (three each). • Link: BBC - Hungry Venus flytraps snap shut on VideoLink.x • Link: The Natural History Museum - How do camels survive in deserts?

Four: Modelling natural selection	• To model how natural selection affects population size. **Working scientifically** • To evaluate the degree of trust and pose new questions for further enquiry.	• I can describe variation in a given population. • I can explain how variation may affect survival within that population. • I can recall what is meant by natural selection. **Working scientifically** • I can recall variables that were effectively kept the same and those harder to control. • I can comment on the reliability of the results. • I can comment on the degree of trust. -	• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments.	- **competition** - **natural selection** - **population** - **reproduce** - **survival of the fittest** -	- Whiteboard and pen (one each). - Modelling natural selection kit (one between three): o 1 tray; o 2 shallow containers or dishes; o 2 differently-sized or shaped tweezers; o 1 stopwatch; o a handful of dried rice. - Modelling natural selection extension (optional & one between three) o a handful of different types of 'food', such as dried pasta, lentils, beads or cake sprinkles. -
Five: Evolution	• To describe the theory of evolution. **Working scientifically** • To consider evidence used to inform theories.	- I can recall what evolution is. - I can identify differences between a living thing and its ancestor. - I can describe key steps in the evolution of a species. **Working scientifically** - I can describe some of the evidence used for evolution. -	- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. - Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills:	- **ancestor** - **evolution** - **extinct** - **scientific theory**	- Whiteboard and pen (one each). - 6 rulers (30 cm). - Green sticky notes. - Link: Evolution of the Horse -

			- Identifying scientific evidence that has been used to support or refute ideas or arguments.		
Six: Evidence for evolution	• To recognise evidence that can be used for evolution. **Working scientifically** • To consider the degree of trust in the evidence used.	• I can recall different evidence that can be used. • I can describe methods used to make results or conclusions more trustworthy. **Working scientifically** • I can consider the advantages and disadvantages of evidence used to explain evolution. • I can evaluate the advantages and disadvantages of the evidence used and consider a degree of trust. -	- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. - Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: - Identifying scientific evidence that has been used to support or refute ideas or arguments.	• **evidence** • **fossil** • **naturalist** • **palaeontologist** • **peer review** • **specimen**	• Whiteboards and pens (one each). • Highlighters or colouring pencils (optional s. see Adaptive teaching). • Link: *Assessment s. Science Y6: Evolution and inheritance.* • Link: BBC Teach True Stories: Mary Anning up until 06:07
Assessment:					

Science – Year 6 – Medium Term Plan
Spring 2- Circuits, batteries and switches.

Developing knowledge of circuits, the effects of changing voltage and how switches contribute to different devices.

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
One: Components and circuits	To use recognised symbols for electrical components.	- I can use standard circuit symbols for electrical components.	- Use recognised symbols when representing a simple circuit in a diagram. **Working scientifically**	- **appliance** - **battery** - **bulb** - **buzzer** - **cell**	- A range of batteries (optional s. see Attention grabber). - Materials to model an electrical circuit (see Main event): o 1 cup for each child;

		- I can describe the function of key electrical components. - I can explain how a model represents electrical components. -	Pupils should be taught to use the following practical scientific methods, processes and skills: - Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	- **circuit** - **component** - **current** - **electricity** - **motor** - **power source** - **switch** - **voltage** - **wire** -	o 1 cup for the teacher; o 1 empty bowl; o 1 bowl containing 30 wrapped sweets or counting cubes. - 4 pre-made signs using large pieces of paper with the symbols for a wire, a cell, a bulb and a switch (see Wrapping up). - Sticky tack. - Chalk to draw on the playground (optional ≤ see Wrapping up). -
Two: Circuit diagrams	• To predict and present results for electrical circuits. **Working scientifically** • To use standardised symbols when drawing diagrams.	•I can predict if an electrical circuit will work or not. •I can explain why an electrical circuit will or will not work. **Working scientifically** •I can use standard circuit symbols when drawing diagrams. •I can draw circuit diagrams that have straight lines. -	- Use recognised symbols when representing a simple circuit in a diagram. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: - Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	- **circuit diagram**	- Whiteboards and pens (one each). - Dice (one between two). - Rulers (one each). - Circuit kits (one between two ≤ see Main event): o 3 cells/batteries; o 5 wires; o 5 bulbs; o 5 buzzers; o 5 switches. - Tricky circuit building kit (optional ≤ one between two, see Main event): o a 9V battery; o plain paper; o 1 LED; o a 6B or 8B graphite pencil; o copper tape or foil; o a paper clip. - Scissors (one each). - A device that records video (optional ≤ see Adaptive teaching). -
Three: Current and resistance	• To recognise a link between the number of components and resistance. **Working scientifically** • To explain results using scientific knowledge.	• I can describe the relationship between the number of bulbs in a circuit and the bulb brightness. • I can describe the link between the number of components and the	• 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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills:	• **ammeter** • **bulb** • **buzzer** • **component** • **current** • **resistance**	• Large space such as a playground or hall. • Large hoops (one between five ≤ see Attention grabber). • Investigating bulb brightness and resistance kits (one per pair ≤ see Main event): o 1 battery; o 3 bulbs;

		amount of resistance in a circuit. • I can explain why the number of bulbs in a circuit affects their brightness. **Working scientifically** • I can use scientific vocabulary when writing a conclusion. • I can use scientific knowledge to explain an observation.	• Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.		○ 4 wires; ○ calculator; ○ ammeter (optional s. see Adaptive teaching). • Other components and resistance (teacher demonstration s. see Wrapping up): ○ 3 batteries; ○ 3 buzzers; ○ 4 wires; ○ ammeter; ○ 3 motors.
Four: Batteries and voltage	• To identify ways to change voltage within an electrical circuit. **Working scientifically** • To design a results table.	• I can identify that batteries are a voltage source. • I can recall that batteries have different voltages. • I can describe how voltage affects bulb brightness. **Working scientifically** • I can choose an appropriate number of columns when designing a results table. • I can choose appropriate headings for the columns of a results table. • I can put any units in the heading of a results table. -	• 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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests.	- **battery** - **cell** - **voltage** - **voltmeter** -	- A variety of batteries in different sizes and voltages (see Teacher knowledge). - Rulers (one each). - Whiteboards and pens (optional s. see Main event). - Computers or devices with internet access (one each s. see Main event). - Link: PHET Circuit Construction Kit -
Five: Voltage and bulb brightness	• To investigate how voltage affects bulb brightness. **Working scientifically** • To plan an enquiry.	• I can describe how changing the number of cells affects the voltage. • I can describe the relationship between voltage and bulb brightness.	• 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	- **battery** - **cell** - **voltage** -	- Audio: Answerphone message. - Whiteboard and pen (one each). - Equipment to investigate voltage and bulb brightness (one between two): ○ 4 AA batteries; ○ 2 bulbs; ○ 3 wires;

		• I can use this relationship to make predictions about other components. **Working scientifically** • I can identify the changed and measured variables. • I can suggest control variables to ensure a fair test. • I can plan ways to control variables to make it a fair test. -	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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests.		o a short length of cardboard tube (approximately 5 cm in length); o 1 data logger or light meter to record light intensity/brightness in lux. - Other components and voltage (teacher demonstration s see Wrapping up): o 3 batteries; o 1 buzzer; o 2 wires; o 1 motor; o 1 data logger or decibel meter to measure volume. - Resource: Enquiry types poster -
Six: Practical circuits	• To apply knowledge of circuits and components to a practical solution. **Science in action** • To recognise that scientific knowledge can solve a problem.	• I can build an electrical circuit with a switch to control its function. • I can draw a circuit diagram to show the circuit used. • I can explain how the switch and the electrical circuit work to solve the problem. **Science in action** • I can recall different problems solved by a	- 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.	**switch**	• Whiteboard and pen (one between three). • Equipment for all practical circuit building (to share with the class): o scissors; o tin foil; o sticky tape; o double-sided tape; o paper clips; o sharp pencil and sticky tack or modelling dough to pierce holes in the card.

		switch in an electrical circuit. • I can explain how switches can be used to keep people safe. -			• Equipment for building a greetings card (one between three for pupils completing this challenge): o A4 white card; o colouring pencils or pens; o 2 cells; o a buzzer or three bulbs/LEDs; o 4 wires; o copper tape (optional); o a switch. • Equipment for building a burglar alarm (one between three for pupils completing this challenge): o thick card from a box; o tin foil; o 2 cells; o 1 buzzer and a bulb to practice with; o 2 wires. • Equipment for building a dog's push button (one between three for pupils completing this challenge): o a sponge; o 2 split pins; o thin cardboard; o 2 cells; o 2 wires; o 1 buzzer and a bulb to practice with. • Equipment for building a water butt alarm (one between three for pupils completing this challenge): o milk bottle lids; o a jar or small bucket to model the water butt; o tin foil; o lolly sticks; o modelling dough or sticky tack; o 2 cells; o 2 wires; o 1 buzzer and a bulb to practice with.
Assessment:					

1.	

Science – Year 6 – Medium Term Plan
Summer 1 – Circulation and health

Exploring the heart and circulatory system through models and enquiries and considering how lifestyle choices affect our health.

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
One: The human digestive system	• To describe the function of the human digestive system. • Working scientifically: To evaluate a model.	- I can list the main organs of the human digestive system. - I can describe the function of the main organs of the digestive system.	- Describe the simple functions of the basic parts of the digestive system in humans. **Working scientifically**	- **absorb** - **digest** - **evaluate** - **faeces** - **large intestine** - **nutrient**	- Bread (one bitesize piece per pupil). - Equipment for modelling the digestive system: o cereal; o potato masher;

		- I can explain how a model has been used to show a part of the digestive system. - Working scientifically: I can identify a weakness in the model used to represent the digestive system. -	Pupils should be taught to use the following practical scientific methods, processes and skills: - Using results to suggest improvements and raise further q	- **oesophagus** - **saliva** - **small intestine** - **stomach** -	○ two large bowls (one labelled 'blood'); ○ one small jug of water labelled 'saliva'; ○ one small jug of fruit juice labelled 'acid'; ○ funnel (and tubing if available); ○ one resealable freezer bag; ○ tights (one pair); ○ a sponge; ○ a tray; ○ scissors (one pair). -
Two: Human teeth	• To recognise the different types of human teeth and their roles in eating. • Science in action: To describe real observation methods and evidence collected.	- I can recall the four types of human teeth. - I can explain what the different teeth are used for. - Science in action: I can identify how scientists find out about teeth. -	Identify the different types of teeth in humans and their simple functions. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: Identifying differences, similarities or changes related to simple scientific ideas and processes.	- **canine** - **chew** - **incisor** - **jaw** - **molar** - **palaeontologist** - **premolar** - **tooth** -	- Modelling dough (a handful per pupil s see Teacher knowledge). - A mini whiteboard (one between three). - A whiteboard pen (one between three). - Mirrors (one between three). - Sticky notes (one each). - Colouring pencils. - Link: BBC Bitesize - Types of teeth.x - Link: Operation Ouch - Why do we have differently shaped teeth? -
Three: Investigating dental hygiene	• To explain how to care for our teeth. • Working scientifically: To plan an enquiry by considering which variables should be changed, measured and controlled. • Science in action: To determine why scientists need to work collaboratively	- I can recall factors that damage teeth. - I can identify the best toothbrush to use when brushing your teeth. - Working scientifically: I can plan a fair test by selecting which variables need to be changed, measured and controlled in an experiment. - Science in action: I can describe some steps involved in real scientific testing.	- Setting up simple practical enquiries and fair tests. - Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units. - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. - Recording findings using simple tables. - Reporting on findings from enquiries.	• **cavity** • **decay** • **dentist** • **enamel** • **fair test** • **variable**	• Eggshells soaked in different liquids for class demonstration (see Teacher guidance). • Mini whiteboards (one each.) • Materials for toothbrush investigation (see Main event): ○ whiteboard marker (one per group); ○ toothbrushes (three per group s see Teacher guidance);

	and evaluate experiments.	-	- Using results to suggest improvements and raise further questions.		○ toothpaste; ○ paper towels (ten per group); ○ stopwatches (one per group).
Four: Teeth of carnivores, herbivores and omnivores	• To recognise that differences in teeth relate to an animal's diet. • Working scientifically: To classify animals based on their diet.	- I can describe what different types of teeth are used for. - I can recall different types of animal diets. - I can construct a food chain. - Working scientifically: I can use evidence when classifying animals. -	- Identify the different types of teeth in humans and their simple functions. - Construct and interpret a variety of food chains, identifying producers, predators and prey. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: - Gathering, recording and classifying data in a variety of ways to help in answering questions.	- **carnivore** - **classify** - **food chain** - **herbivore** - **omnivore** -	- Magnifying glasses (optional s. 12). - Link: BBC Teach - How do different animals use their teeth to eat? (up to 2:35)x - Link: Food Chain Song -
Five: Producers, predators and prey in food chains	• To recognise producers, predators and prey in food chains. • Working scientifically: To analyse trends in line graphs and form conclusions using scientific knowledge.	- I can identify a producer, a predator and prey. - I can explain population changes using scientific ideas. - Working scientifically: I can begin to analyse predator-prey graphs. - Working scientifically: I can predict missing values from data. -	• Construct and interpret a variety of food chains, identifying producers, predators and prey. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Recording findings using charts. • Reporting on findings from enquiries, including oral and written explanations, presentations of results and conclusions. • Using results to draw simple conclusions and make predictions for new values.	**hunt** **population** **predator** **prey** **producer** **relationship** -	- Space large enough for pupils to run freely, such as the playground or hall. - Whistle. - Stopwatch. - Hoops (one for every three pupils in the class, minus one. For example, a class of 30 needs nine hoops). - Tennis balls or beanbags (one each). - Bibs. - Tag rugby bands. - Link: BBC Bitesize - Woodland Food Chain Challenge -
Six: One: Poo clues	• To recognise that animal poo can give us clues about digestion, teeth and diet.	- I can describe what a herbivore, carnivore and omnivore are. - I can look for clues in poo. - I can explain why poo is useful evidence.	• Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions. • Identify producers, predators and prey. **Working scientifically**	• **diet** • **dung** • **evidence** • **record** • **sample**	• Homemade poo samples (see Teacher guidance): ○ 300 g of flour; ○ 300 g of salt; ○ one tablespoon of vegetable oil; ○ beef stock cubes;

	• Working scientifically: To construct a results table for recording observations.	- Working scientifically: I can draw a results table and record observations. -	Pupils should be taught to use the following practical scientific methods, processes and skills: • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language and tables. • Reporting on findings from enquiries, including oral and written explanations or presentations of results and conclusions. • Using results to draw simple conclusions. • Using straightforward scientific evidence to answer questions or to support their findings.		○ warm water; ○ brown paint; ○ seeds; ○ grass; ○ sticks; ○ hair; ○ crushed black pepper; ○ large mixing bowl; ○ plates or containers for samples. • Magnifying glasses (optional s one per sample). • Link: BBC Earth - Steve Backshall's Poo Clue on VideoLink.x • Link: BBC Earth - Chimpanzees and Steve Backsha
Assessment: 2.					

Science – Year 6 – Medium Term Plan
Summer 2: Making connections: Are some sunglasses safer than others? (31st May 2024)

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
		-		-	-
Two:		-		-	-
Three:		-			

Four:		-		-	-
Five:		-		-	-
Six:		-			
Assessment: 3.					