

LONG TERM PLAN SCIENTIFIC KNOWLEDGE (Frequency of Coverage of Skills)

Singleton C E Primary School

Science- Frequency of Skills Coverage

YEAR 1/2

BIOLOGY

CHEMISTRY

PHYSICS

Plants

Animals, including humans

Living things and their habitats

Everyday materials (incl. uses of)

Seasonal changes

Cycle A

Spring Term 2:
ANIMALS WHERE WE LIVE (Y1)
Lesson 1: Which Plants and Animals live here?
identify and name a variety of common

- wild and garden plants, including deciduous and evergreen trees
- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- flowering plants, including trees

Lesson 2: Adopt a tree

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common

Pupils should be taught to:

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees.

Pupils might work scientifically by:

- Observing closely, perhaps using magnifying glasses.
- Comparing and contrasting familiar plants.
- Describing how they were able to identify and group them, and
- Drawing diagrams showing the parts of different plants including trees
- Comparing and contrasting what they have found out about different plants.

TOPIC 5: YOUNG GARDENERS (Y2)
Lesson 4: What is growing in our school grounds?

- identify and name a variety of plants and animals in their habitats, including microhabitats

Lesson 5: What shall we grow?

- observe and describe how seeds and bulbs grow into mature plants

Lesson 6: What do seeds need for germination?
find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

Spring Term 2
Lesson 3: Which group does the animal belong to?

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- identify and name a variety of common animals that are carnivores, herbivores and omnivore.

Autumn Term 2:
TOPIC 1: WHO AM I? (Y1)
Lesson 1: My Body Apron

- identify, name, draw and label the basic parts of the human body

Lesson 2: Smell Table

- and say which part of the body is associated with each sense

Lesson 3: What's the Taste?

- and say which part of the body is associated with each sense

Lesson 4: My Eyes

- and say which part of the body is associated with each sense

Lesson 5: Using my Hands

- and say which part of the body is associated with each sense

Lesson 6: Using Our Ears to Hear

- and say which part of the body is associated with each sense

Animals: Humans:
Pupils should be taught to:

- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
- Recognise that humans are animals.

Autumn 1
Lesson 2: Sort it

- explore and compare the differences between things that are living, dead, and things that have never been alive

Lesson 3: Explore!

- explore and compare the differences between things that are living, dead, and things that have never been alive

Lesson 4: Find a micro-habitat

- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other

Lesson 5: Food chain pairs

- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food

Lesson 6: Extending the food chain

- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food

Pupils should be taught to:

- explore and compare the differences between things that are living, dead, and things that have never been alive **A.F. - identify whether things are alive, dead or have never lived.**
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- identify and name a variety of plants and animals in their habitats, including microhabitats **A.F. - name different plants and animals and describe how they are suited to different habitats**
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. **A.F. - describe how animals get their food from other animals and/or from plants, and use simple food chains to describe these relationships**

Pupils should be taught to:

- Explore and compare the differences between things that are living, dead, and things that have never been alive.
- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.
- Identify and name a variety of plants and animals in

Summer Term 1:
TOPIC 2: MATERIALS MONSTER (Y2)
Lesson 2: Feeding Time

- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses

Lesson 3: Sorting for Materials Monster

- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses

Lesson 4: Talk to Materials Monster

- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses

Pupils should be taught to:

- distinguish between an object and the material from which it is made **A.F. - use their knowledge and understanding of the properties of materials, to distinguish objects from materials**
- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock **A.F. - identify materials**
- describe the simple physical properties of a variety of everyday materials
- compare and group together a variety of everyday materials on the basis of their simple physical properties.

TOPIC 3: SQUASH, SQUEEZE, BEND AND TWIST (Y2)
Lesson 6: Flexible me

- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Summer Term 2
TOPIC 3: SQUASH, SQUEEZE, BEND AND TWIST (Continued)
Lesson 1: Squash me, bend me, twist me, stretch me

- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Lesson 2: Sort me

- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Pupils should be taught to:

- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboards for particular uses. **AF.- compare**

Autumn 1 SEASONAL CHANGE (Y1)
Lesson 1: September

- observe changes across the 4 seasons
- observe and describe weather associated with the seasons and how day length varies

Spring Term 1: SEASONAL CHANGE (Y2)
Lesson 1: January

- observe changes across the 4 seasons
- observe and describe weather associated with the seasons and how day length varies

Summer Term 1: SEASONAL CHANGE (Y1)
Lesson 5: May

- observe changes across the 4 seasons
- observe and describe weather associated with the seasons and how day length varies

Pupils might work scientifically by:

Keeping records of how plants have changed over time, for example the leaves falling off trees and buds opening.

Pupils should be taught to:

- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies. **A.F. - describe seasonal changes**

Pupils should be taught to:

- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how day length varies.

Pupils might work scientifically by:

- Making tables and charts about the weather and
- Making displays of what happens in the world around them, including day length, as the seasons change.

Additional suggestion from Lancashire for working scientifically opportunities which enhance learning and support using ICT across the curriculum

This unit provides an ideal opportunity for using data logging equipment to record temperatures

Summer Term 1:

TOPIC 5: YOUNG GARDENERS (Continued)

Lesson 1: What do plants need to grow?

- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

Pupils should be taught to:

-observe and describe how seeds and bulbs grow into mature plants **A.F.** – describe the main changes as seeds and bulbs grow into mature plants

-find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **A.F.** - describe basic needs of plants for survival and the impact of changing these

Pupils should be taught to:

- Observe and describe how seeds and bulbs grow into mature plants
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- Plants are living and eventually die

Pupils might work scientifically by:

- Observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or
- Observing similar plants at different stages of growth; Setting up a comparative test to show that plants need light and water to stay healthy.

- Compare and describe differences in their own features (eye, hair, skin colour, etc.).
- Recognise that humans have many similarities.

Pupils might work scientifically by using their observations to:

- Compare and contrast animals (humans) at first hand or through videos and photographs.
- Using their senses to compare different textures, sounds and smells

Spring Term 2

HEALTHY ME (Y2) (links to PSHE)

Lesson 2: What makes me happy?

- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)

- Animals have senses to explore the world around them and to help them to survive.
- Recognise that animals need to be treated with care and sensitivity to keep them alive and healthy.
- Animals are alive; they move, feed, grow, use their senses and reproduce

Lesson 3: How does exercise help me?

- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene

Summer Term 2:

Lesson 6: Identify and Classify Seashore Animals

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals

Lesson 4: Marine animal puppets

- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)

-describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) **A.F.** - describe and compare the observable features of animals from a range of groups

Animals, other animals:

Pupils should be taught to:

- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores.
- Describe and compare the structure of a variety of common animals (fish,

- their habitats, including micro-habitats.
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.
- Different kinds of plants and animals live in different kinds of places.

Pupils might work scientifically by:

- Sorting and classifying things as to whether they are living, dead or were never alive.
- Recording their findings using charts
- Describing how they decided where to place things,
- Exploring questions such as: 'Is a flame alive? Is a deciduous tree dead in winter?'
- Talking about ways of answering their questions.
- Constructing a simple food chain that includes humans (e.g. grass, cow, human);
- Describing the conditions in different habitats and micro-habitats (under log, on stony path, under bushes);

the suitability of materials for different uses.

-find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Pupils should be taught to:

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Pupils might work scientifically by:

- Observing closely,
- Identifying and classifying the uses of different materials, and
- Recording their observations.

TOPIC 3: HOLIDAY (Y1)

Lesson 4: Packing a case.

- distinguish between an object and the material from which it is made
- compare and group together a variety of everyday materials on the basis of their simple physical properties

Lesson 5: Sunglasses

- describe the simple physical properties of a variety of everyday materials

Lesson 5: Messy Humans

- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- distinguish between an object and the material from which it is made

Pupils should be taught to:

- Distinguish between an object and the material from which it is made.
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.
- Describe the simple physical properties of a variety of everyday materials.
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.

Pupils might work scientifically by:

- performing simple tests to explore questions, for example:

'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'

	<p>amphibians, reptiles, birds and mammals, and including pets).</p> <ul style="list-style-type: none"> ▪ Find out and describe how animals look different to one another. ▪ Group together animals according to their different features. ▪ Recognise similarities between animals: <ul style="list-style-type: none"> – Structure: head, body, way of moving, senses, body covering, tail. <p>Pupils might work scientifically by using their observations to:</p> <ul style="list-style-type: none"> ▪ Compare and contrast animals at first hand or through videos and photographs. ▪ Describing how they identify and group them. ▪ Grouping animals according to what they eat. ▪ Using their senses. <p>Lesson 4: Why do we need food?</p> <ul style="list-style-type: none"> ● describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene <p>Lesson 5: Swapping Snacks</p> <ul style="list-style-type: none"> ● describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene <p>Lesson 6: Spraying germs</p> <ul style="list-style-type: none"> ● describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene <p>find out about and describe the basic needs of animals, including humans, for survival (water, food and air) A.F. - describe the basic needs of animals for survival</p> <p>-describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. A.F. - describe the importance of exercise, balanced diet and hygiene for humans</p> <ul style="list-style-type: none"> ▪ Find out about and describe the basic needs of animals, for survival (water, food and air). ▪ Find out about and describe the basic needs of humans, for survival (water, food and air). ▪ Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> ▪ Observing, through video or first-hand observation and measurement, how humans grow. ▪ Recording their findings using charts. ▪ Asking questions about what things animals [humans]. need for survival and what humans need to stay healthy. 			
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		<p>Suggesting ways to find answers to their questions</p>			
<p>Cycle B</p>		<p>Pupils should be taught to: notice that animals, including humans, have offspring which grow into adults THIS OBJECTIVE IS COVERED WITHIN THE PSHE TOPICS IN CYCLE B TERM 6 A.F. – describe the main changes as young animals, including humans, grow into adults</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ Notice that animals, have offspring which grow into adults. <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> ▪ Observing, through video or first-hand observation and measurement, how different animals grow; <p>Asking questions about what things animals need for survival suggesting ways to find answers to their questions.</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ Notice that humans, have offspring which grow into adults. ▪ Medicines can be useful when we are ill. ▪ Medicines can be harmful if not used properly. 	<ul style="list-style-type: none"> ▪ There are different kinds of habitat near school which need to be cared for ▪ Habitats provide the preferred conditions for the animals/plants that live there (compare local habitats and less familiar examples). ▪ Finding out how the conditions affect the number and type(s) of plants and animals that live there. 	<ul style="list-style-type: none"> ▪ Some materials can be found naturally; others have to be made <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> ▪ Comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); ▪ Observing closely, ▪ Identifying and classifying the uses of different materials, and ▪ Recording their observations. ▪ Thinking about unusual and creative uses for everyday materials. 	

Science- Frequency of Skills Coverage

YEAR 3/4

BIOLOGY		CHEMISTRY			PHYSICS				
	Plants	Living things and their habitats	Animals, including humans	Rocks	States of Matter	Light	Sound	Forces and Magnets	Electricity
Cycle A	<p>TOPIC 4: HOW DOES YOUR GARDEN GROW? (Y3)</p> <p>Lesson 4: Parts of a Plant (p.59)</p> <ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem / trunk, leaves and flowers. <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. <p>Lesson 5: How is Water Transported in a Plant? (p.61)</p> <ul style="list-style-type: none"> Investigate the way in which water is transported within plants. <i>Set up simple practical enquiries, comparative and fair tests.</i> <p>Lesson 6: How much water do plants need to be healthy? (p.64)</p> <p>Explain the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) and how they vary from plant to plant. <i>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment,</i></p>	<p>Summer Term 2:</p> <p>TOPIC 2: LIVING THINGS (Y4)</p> <p>Lesson 4: Sort Me (p.26)</p> <ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. <i>Ask relevant questions and use different types of scientific inquiries to answer them. / Use straight forward scientific evidence to answer questions or to support their findings.</i> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -recognise that living things can be grouped in a variety of ways <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. <p>Lesson 5: Identifying and Recording Living Things (p.30)</p> <ul style="list-style-type: none"> Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. <i>Gather, record, classify and present data in a variety of ways to help in answering questions</i> <p>-explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <ul style="list-style-type: none"> Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Use and make identification keys for plants and animals. <p>Lesson 6: Bees – Friends or Foes?</p> <ul style="list-style-type: none"> Recognise that environments can change and that this can sometimes pose dangers to living things. <p>-recognise that environments can change and that this can sometimes pose dangers to living things</p>	<p>Summer Term 2:</p> <p>TOPIC 2: FOOD AND OUR BODIES (Y3)</p> <p>Lesson 1: What do humans and other animals need to live? (p.28)</p> <ul style="list-style-type: none"> Identify the animals, including humans, need the right types and amounts of nutrition, and that they cannot make their own food; they get nutrition from what they eat. <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat <p>Animals (health and nutrition):</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. An adequate and varied diet is beneficial to health (along with a good supply of air and clean water). <p>Lesson 2: Our Skeletons (p.33)</p> <ul style="list-style-type: none"> Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p>Lesson 3: Muscles (p.37)</p> <ul style="list-style-type: none"> Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p>-identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>Animals (Skeletons and Movement):</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	<p>Autumn Term 1:</p> <p>TOPIC 1: ROCKS, SOILS AND FOSSILS (Y3)</p> <p>Lesson 1: Comparing Rocks (p.11)</p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. <p>Lesson 2: Sedimentary Sandwiches (p.13)</p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. <p>Lesson 3: Chocolate Metamorphic Rocks (p.14)</p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. <p>Lesson 4: Chocolate Igneous Rocks (p.15)</p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. <p>Lesson 5: What is soil? (p.16)</p> <ul style="list-style-type: none"> Recognise that soils are made from rock and organic matter. <i>Ask relevant questions and use different types of scientific enquiries to answer them.</i> <p>Lesson 6: Looking at Fossils (p.20)</p> <ul style="list-style-type: none"> Describe in simple terms how fossils are formed when things that have lived are trapped within rock. <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -compare and group together different kinds of rocks on the basis of their appearance and simple physical properties -describe in simple terms how fossils are formed when things that have lived are trapped within rock -recognise that soils are made from rocks and organic matter. <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. 	<p>Spring Term 2:</p> <p>TOPIC 3: LOOKING AT STATES (Y4)</p> <p>Lesson 4: In a State (p.42)</p> <ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases. <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -compare and group materials together, according to whether they are solids, liquids or gases <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases. <p>Lesson 5: Ice Hands (p.44)</p> <ul style="list-style-type: none"> Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). <p>-observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</p> <ul style="list-style-type: none"> Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). <p>Lesson 6: Evaporation (p.48)</p> <ul style="list-style-type: none"> Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. <i>Set up simple practical enquiries, comparative and fair tests. / Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions / Identify differences, similarities or changes related to simple scientific ideas and processes.</i> <p>-identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <ul style="list-style-type: none"> Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temp. 	<p>Autumn Term 2:</p> <p>TOPIC 3: LIGHT AND SHADOWS (Y3)</p> <p>Lesson 6: Sources of Light (p.45)</p> <ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light. recognise that light from the sun can be dangerous and that there are ways to protect their eyes. / <i>Set up simple practical enquiries, comparative and fair tests.</i> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -recognise that they need light in order to see things and that dark is the absence of light -recognise that light from the sun can be dangerous and that there are ways to protect their eyes <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. <p>Spring Term 1:</p> <p>TOPIC 3: LIGHT AND SHADOWS (Continued)</p> <p>Lesson 1: Shiny and Dull (p.47)</p> <ul style="list-style-type: none"> Notice that light is reflected from surfaces. / <i>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</i> <p>notice that light is reflected from surfaces</p>	<p>Autumn Term 2:</p> <p>TOPIC 1: WHAT'S THAT SOUND? (Y4)</p> <p>Lesson 1: Let's Make a Sound (p.11)</p> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -identify how sounds are made, associating some of them with something vibrating -recognise that vibrations from sounds travel through a medium to the ear <p>Lesson 2: Feeling and Seeing the Vibrations (p.11)</p> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. <i>Set up simple practical enquiries, comparative and fair tests. / Use straightforward scientific evidence to answer questions or to support their findings.</i> <p>Pupils should be taught to:</p> <p>Vibrations</p> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases. Sounds can be made in a variety of ways (pluck, bang, shake, blow) using a variety of things (instruments, everyday materials, body). Sounds travel away from their source in all directions. Vibrations may not always be visible to the naked eye. <p>Lesson 3: How does a guitar work? (p.13)</p> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. Find patterns between the volume of a sound and the strength of the vibrations that produced it. 	<p>Spring Term 2:</p> <p>TOPIC 5: FORCES AND MAGNETS (Y3)</p> <p>Lesson 6: Moving Things on Different Surfaces (p.77)</p> <ul style="list-style-type: none"> Compare how things move on different surfaces. <i>Set up simple practical enquiries, comparative and fair tests. / Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment including thermometers and data loggers. / Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. / Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</i> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -compare how things move on different surfaces -notice that some forces need contact between two objects, but magnetic forces can act at a distance -observe how magnets attract or repel each other and attract some materials and not others <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Compare how some things move on different surfaces. Notice that some forces need contact between two objects but magnetic forces can act at a distance. 	<p>Spring Term 2:</p> <p>TOPIC 5: POWER IT UP (Y4)</p> <p>Lesson 2: Which Source? (p.68)</p> <ul style="list-style-type: none"> Identify common appliances that run on electricity. <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -identify common appliances that run on electricity <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Identify common appliances that run on electricity. <p>Lesson 3: Simple Circuits (p.70)</p> <ul style="list-style-type: none"> Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. <p>-construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <ul style="list-style-type: none"> -identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <ul style="list-style-type: none"> Identify whether or not a lamp will light in a simple series circuit, Based on whether or not the lamp is part of

Cycle A

including thermometers and data loggers. / Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. / Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

-explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant

-investigate the way in which water is transported within plants

Spring Term 2:
TOPIC 4: HOW DOES YOUR GARDEN GROW? (Continued)

Lesson 1: Parts of a Flower (p.67)

- Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

-explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

- Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.
- Investigate the way in which water is transported within plants.
- Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
- Roots grow downwards and anchor the plant.
- Water, taken in by the roots, goes up the stem to the leaves, flowers and fruit.
- Nutrients (not food) are taken in through the roots.

environments can change and that this can sometimes pose dangers to living things.

Pupils might work scientifically by:

- Using and making simple guides or keys [sorting, grouping, comparing, classifying] to explore and identify local plants and animals.
- Making a guide [sorting, grouping, comparing, classifying] to local living things.
- Raising and answering questions based on their observations of animals. What they have found out about other animals that they have researched.

Identify animals (vertebrates) which have a skeleton which supports their body, aids movement & protects vital organs (be able to name some of the vital organs).

Pupils might work scientifically by:

- Identifying and grouping animals with and without skeletons.
- Observing and comparing their movement.
- Exploring ideas about what would happen if humans did not have skeletons.

- Recognise that soils are made from rocks and organic matter.
- Rocks and soils can feel and look different.
- Rocks and soils can be different in different places/environments.

Notes and Guidance (non-statutory):

Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment.

Pupils might work scientifically by:

- Observing rocks, including those used in buildings and gravestones.
- Exploring how and why they might have changed over time.
- Using a hand lens or microscope to help them.
- Identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them.
- Research and discuss the different kinds of living things whose fossils are found in sedimentary rock.
- Explore how fossils are formed.
- Explore different soils.
- Identify similarities and differences between them.
- Investigate what happens when rocks are rubbed together or what changes occur when they are in water.
- Raise and answer questions about the way soils are formed.

- Solids, liquids and gases can be identified by their observable properties.
- Solids have a fixed size and shape (the size and shape can be changed but it remains the same after the action).
- Liquids can pour and take the shape of the container in which they are put.
- Liquids form a pool not a pile.
- Solids in the form of powders can pour as if they were liquids but make a pile not a pool.
- Gases fill the container in which they are put.
- Gases escape from an unsealed container.
- Gases can be made smaller by squeezing/pressure.
- Liquids and gases can flow.

Pupils might work scientifically by:

- Grouping and classifying a variety of different materials.
- Exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party).
- Researching the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid.
- Observing and recording evaporation over a period of time, such as a puddle in the playground or washing on a line.
- Investigating the effect of temperature on washing drying or snowmen melting.
- Additional suggestion from Lancashire for working scientifically opportunities which enhance learning and support using ICT. This unit provides an ideal opportunity for using data logging equipment to detect/measure and compare temperatures.

Notice that light is reflected from surfaces

Lesson 2: Which Material is best for making Shadows? (p.52)

Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment including thermometers and data loggers.

Lesson 3: Exploring my Shadow (p.54)

- Find patterns in the way that the sizes of shadows change.

--recognise that shadows are formed when the light from a light source is blocked by an opaque object

-find patterns in the way that the size of shadows change.

- Recognise that shadows are formed when the light from a light source is blocked by a solid object.
- Find patterns in the way that the size of shadows change.

Pupils might work scientifically by:

- Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes

- Find patterns between the pitch of a sound and features of the object that produced it. Use straightforward scientific evidence to answer questions or to support their findings.

find patterns between the pitch of a sound and features of the object that produced it

-find patterns between the volume of a sound and the strength of the vibrations that produced it

Pitch

- Find patterns between the pitch of a sound and features of the object that produced it.
- Sounds can be high or low pitched.
- The pitch of a sound can be altered.
- Pitch can be altered either by changing the material, tension, thickness or length of vibrating objects or changing the length of a vibrating air column.

Muffling/blocking sounds

- Recognise that vibrations from sounds travel through a medium to the ear.
- Sounds are heard when they enter our ears (although the structure of the ear is not important key learning at this age phase).
- Sounds can travel through solids, liquids and air/gas by making the materials vibrate.
- Sound travel can be reduced by changing the material that the vibrations travel through.
- Sound travel can be blocked.

Lesson 4: How Far Away Can You Hear It? (p.16)

Recognise that sounds get fainter as the distance from the sound source increases. Set up simple practical enquiries, comparative and

fair tests. / Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. / Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

-recognise that sounds get fainter as the distance from the sound source increases.

Lesson 5: Sounds travelling through different materials (p.18)

- Recognise that vibrations from sound travel through a medium to the ear. Set up simple practical enquiries, comparative and fair

Summer Term 1:
TOPIC 5: FORCES AND MAGNETS (Continued)

Lesson 1: Which magnet is the strongest? (p.78)

- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment including thermometers and data loggers. / Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. / Use straightforward scientific evidence to answer questions or to support their findings

-compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials

Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.

Lesson 2: North and South poles (p.80)

- Describe magnets as having two poles.
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

-describe magnets as having two poles

Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.

Lesson 3: Fun Magnetic Games (p.81)

a complete loop with a battery.

Lesson 4: Switches (p.71)

Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.

Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.

Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit

Electricity sources can be mains or battery.

Batteries 'push' electricity round a circuit and can make bulbs, buzzers and motors work.

Faults in circuits can be found by methodically testing connections.

Drawings, photographs and diagrams can be used to represent circuits (although standard symbols need not be introduced until UKS2).

-recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit

Lesson 5: Conductors (p.73)

- Recognise some common conductors and insulators, and associate metals with being good conductors. Use straightforward scientific evidence to answer questions or to support their findings.

-recognise some common conductors and insulators, and associate metals with being good conductors

Recognise some common conductors and insulators, and associate metals with being good conductors.

Electricity can be dangerous.

	<ul style="list-style-type: none"> ▪ Stems provide support and enable the plant to grow towards the light. ▪ Plants make their own food in the leaves using energy from the sun. ▪ Flowers attract insects to aid pollination. ▪ Pollination is when pollen is transferred between plants by insects, birds, other animals and the wind. ▪ Fertilisation occurs in the ovary of the flower. ▪ Seeds are formed as a result of fertilisation. ▪ Many flowers produce fruits which protect the seed and/or aid seed dispersal. ▪ Seed dispersal, by a variety of methods, helps ensure that new plants survive. ▪ Plants need nutrients to grow healthily (either naturally from the soil or from fertiliser added to soil). 						<p><i>tests. / Use results to draw simple conclusions,</i></p> <ul style="list-style-type: none"> • <i>make predications for new values, suggest improvements and raise further questions. / Identify differences, similarities or changes related to simple scientific ideas and processes. / Use straightforward scientific evidence to answer questions or support their findings.</i> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> ▪ Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. ▪ They might make ear muffs from a variety of different materials to investigate which provides the best insulation against sound. ▪ They could make and play their own instruments by using what they have found out about pitch and volume. <p>Additional suggestion from Lancashire for working scientifically opportunities which enhance learning and support using ICT across the curriculum This unit provides an ideal opportunity for using data logging equipment to detect/measure and compare sounds.</p>	<ul style="list-style-type: none"> ⑤ Notice that some forces need contact between two objects, but magnetic forces can act at a distance. ⑥ Observe how magnets attract or repel each other and attract some materials and not others. <p>-predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <ul style="list-style-type: none"> ▪ Observe how magnets attract or repel each other and attract some materials and not others. <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> ▪ Comparing how different things move and grouping them. ▪ Raising questions and carrying out tests to find out how far things move on different surfaces. ▪ Gathering and recording data to find answers to their questions. ▪ Exploring the strengths of different magnets and finding a fair way to compare them. ▪ Sorting materials into those that are magnetic and those that are not. <p>Looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another.</p> <ul style="list-style-type: none"> ▪ Identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets. 	<p>Pupils might work scientifically by:</p> <p>Observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.</p>
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<p>Cycle B</p>	<p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> ▪ Comparing the effect of different factors on plant growth, for example the amount of light, the amount of fertiliser; ▪ Discovering how seeds are formed by ▪ Observing the different stages of plant cycles over a period of time; ▪ Looking for patterns in the structure of fruits that relate to how the seeds are dispersed. ▪ Observing how water is transported in plants, for example, by putting cut, white carnations into coloured water. ▪ Observing how water travels up the stem to the flowers. 	<p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> ▪ 	<ul style="list-style-type: none"> ▪ Regular and varied exercise <i>from a variety of different activities</i> is beneficial to health (focus on <i>energy in versus energy out</i>. Include information on making informed choices). <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> ▪ Comparing and contrasting the diets of different animals (including their pets). ▪ Decide ways of grouping them according to what they eat. ▪ Researching different food groups and how they keep us healthy. ▪ Designing meals based on what they find out <ul style="list-style-type: none"> ▪ Identify animals without internal skeletons/backbones (invertebrates) and describe how they have adapted other ways to support themselves, move & protect their vital organs. ▪ Know how the skeletons of birds, mammals, fish, amphibians or reptiles are similar (backbone, ribs, skull, bones used for movement) and the differences in their skeletons. ▪ Know that muscles, which are attached to the skeleton, help animals move parts of their body. ▪ Explore how humans grow bigger as they reach maturity by making comparisons linked to body proportions and skeleton growth – e.g. do people with longer legs have longer arm spans? ▪ Recognise that animals are alive; they move, feed, grow, use their senses and reproduce. <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -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 -construct and interpret a variety of food chains, identifying producers, predators and prey. <p>Animals (teeth, eating and digestion):</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ 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. 						
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Science- Frequency of Skills Coverage

YEAR 5/6

BIOLOGY

CHEMISTRY

PHYSICS

	Living things and their habitats	Animals including humans	Evolution and Inheritance	Properties and changing of materials	Earth and Space	Light	Forces	Electricity
Cycle A	<p>Spring Term 1: TOPIC 3: CIRCLE OF LIFE (Y5) Lesson 5: Plant reproduction (p.41)</p> <ul style="list-style-type: none"> describe the life process of reproduction in some plants and animals. / <i>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</i> <p>Pupils should be taught to: -describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Observing Life Cycles: Pupils should be taught to: Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>Lesson 6: Bird Life Cycle (p.44) describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Spring Term 2: TOPIC 3: CIRCLE OF LIFE (Y5) continued Lesson 1: Butterfly Life Cycle (p.45)</p> <ul style="list-style-type: none"> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird <p>Lesson 2: Life Cycle of a frog (p.46) describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. / <i>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</i></p> <p>Lesson 3: Life cycle of a Mammal (This lesson has not been taken from 'Switched on Science')</p>	<p>Summer Term 1: TOPIC 2: HEALTHY BODIES (Y6) <i>Links with PSHE</i> Lesson 1: What do you want to know? (p.22)</p> <ul style="list-style-type: none"> Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. / <i>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. / Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</i> <p>Pupils should be taught to: -identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Pupils should be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Lesson 2: Changes in heart and breathing rate (p.24) recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. / <i>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. / Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. / Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. / Use test results to make predictions to set up further comparative and fair tests. / Report and present findings from enquiries, including</i></p>	<p>Summer Term 2: TOPIC 3: EVOLUTION AND INHERITANCE (Y6) Lesson 3: Life on Earth timeline (p.35)</p> <ul style="list-style-type: none"> recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago <p>Lesson 4: Guess who? (p.38) things produce offspring of the same kind, but normally offspring vary and are not identical to their parents / <i>Identify scientific evidence that has been used to support or refute ideas or arguments.</i></p> <p>Lesson 5: Adaptation (p.39) identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. / <i>Identify scientific evidence that has been used to support or refute ideas or arguments.</i></p> <p>Lesson 6: How have they changed? (p.41) identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. / <i>Identify scientific evidence that has been used to support or refute ideas or arguments.</i></p> <p>Pupils should be taught to: -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.</p> <p>Pupils should be taught to: 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</p>	<p>Autumn Term 2: TOPIC 2: MATERIAL WORLD (Y5) Lesson 1: Sorting Materials (p.24)</p> <ul style="list-style-type: none"> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. <p>Pupils should be taught to: -compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Testing Material Properties: Pupils should be taught to: Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <ul style="list-style-type: none"> Compare a variety of materials and measure their effectiveness (e.g. hardness, strength, flexibility, solubility, transparency, thermal conductivity, electrical conductivity). <p>Lesson 2: Why that Material? (p.25) give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Lesson 3: Testing Materials – which material makes the strongest carrier bag? (p.25) give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p>	<p>Autumn Term 1: TOPIC 1: OUT OF THIS WORLD (Y5) Lesson 1: The Solar System (p.10)</p> <ul style="list-style-type: none"> Describe the movement of the Earth and other planets relative to the Sun in the Solar System. <i>Report and present findings from enquiries, including conclusions, casual relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</i> <p>Pupils should be taught to: -describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <ul style="list-style-type: none"> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe Sun/Earth/Moon as approximately spherical bodies. <p>Lesson 2: What is at the centre of the Solar System? (p.12) Describe the movement of the Earth and other planets relative to the Sun in the Solar System. Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>-describe the movement of the Moon relative to the Earth describe the Sun, Earth and Moon as approximately spherical bodies</p> <ul style="list-style-type: none"> Use the idea of the Earth's rotation to explain day and night. The Earth spins once around its own axis in 24 hours, giving day and night <p>Lesson 3: Explaining Day and Night (p.15) Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.</p> <ul style="list-style-type: none"> Lesson 4: Biscuit Moons (p.18) Describe the movement of the Moon relative to the Earth. <p>-use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <ul style="list-style-type: none"> he Earth orbits the Sun in one year. We can see the Moon because the Sun's light reflects off it. The Moon orbits the Earth in approximately 28 days and changes to the appearance of the moon are 	<p>Spring Term 1: Lesson 2: How does light travel? (p.47)</p> <ul style="list-style-type: none"> 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. <i>Take 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</i> <p>Pupils should be taught to: -recognise that light appears to travel in straight lines</p> <p>Lesson 3: Pattern seeking from shadows (p.49) recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. / <i>Take 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.</i></p> <p>Lesson 4: Seeing is believing (p.51) 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</p> <p>-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</p>	<p>Summer Term 1: TOPIC: 4 LET'S GET MOVING (Y5) Lesson 4: Gravity (p.57)</p> <ul style="list-style-type: none"> explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. / <i>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. / Use test results to make predictions to set up further comparative and fair tests.</i> <p>Pupils should be taught to: -explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Pupils should be taught to: Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Lesson 5: Parachutes (p.61) identify the effects of air resistance, water resistance and friction, that act between moving surfaces. / <i>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. / Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. / Record</i></p>	<p>Autumn Term 1: TOPIC 5: ELECTRICITY (Y6) Lesson 5: Liquorice Allsorts circuit diagram (p.59)</p> <ul style="list-style-type: none"> Use recognised symbols when repeating a simple circuit in a diagram. <p>-use recognised symbols when representing a simple circuit in a diagram.</p> <ul style="list-style-type: none"> Use recognised symbols when representing a simple circuit in a diagram. Circuit diagrams can be used to construct a variety of more complex circuits predicting whether they will 'work'. <p>Lesson 6: How bright? (p.61) Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit.</p> <ul style="list-style-type: none"> 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>Report and present findings from enquiries, including conclusions, casual relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</i> <p>Pupils should be taught to: -associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>-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</p> <p>Pupils should be taught to: 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</p>

Lesson plan

- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- describe the changes as humans develop to old age

-describe the life process of reproduction in some plants and animals

- Describe the life process of reproduction in some plants and animals.

Pupils might work scientifically by:

- Observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times).
- Asking pertinent questions.
- Suggesting reasons for similarities & differences.

Spring Term 2:

TOPIC 1: CLASSIFYING LIVING THINGS (Y6)

Lesson 4: Quick classifications (p.11)

- give reasons for classifying plants and animals based on specific characteristics.

Pupils should be taught to:

-describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals

Lesson 5: Classifying the local environment (p.12)

- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals/ Give reasons for classifying plants and animals based on specific characteristics.

Pupils should be taught to:
 Describe how living things are classified into broad groups according to

conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. / Identify scientific evidence that has been used to support or refute ideas or arguments

-recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function

- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.

Lesson 3: Diet (p.27)

- 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 the ways in which nutrients and water are transported within animals, including humans

- Describe the ways in which nutrients and water are transported within animals, including humans.

- The heart is a major organ and is made of muscle.

- The heart pumps blood around the body through vessels and this can be felt as a pulse.

- The heart pumps blood through the lungs in order to obtain a supply of oxygen.

- Blood carries oxygen/essential materials to different parts of the body.

- During exercise muscles need more oxygen so the heart beats faster and our breathing and pulse rates increase.

- Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete.

- An adequate, varied and balanced diet is needed to help us grow and repair our bodies (proteins), provide us with energy (fats and carbohydrates) and maintain good health (vitamins and minerals).

- Tobacco, alcohol and other 'drugs' can be harmful.
- All medicines are drugs, not all drugs are medicines.

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.

Pupils might work scientifically by:

- Observing and raising questions about local animals and how they are adapted to the environment.
- Comparing how some living things adapt to survive in extreme conditions, e.g. cactuses, penguins and camels.

Analysing the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.

Lesson 4: Searching for a solution (p.30)

- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.
- demonstrate that dissolving, mixing and changes of state are reversible changes / Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.

-know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

Lesson 5: Sieving (p.32)

- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

Lesson 6: Filtering (p.33)

- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating / plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. / use test results to make predictions to set up further comparative and fair tests.

-use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

-demonstrate that dissolving, mixing and changes of state are reversible changes

Material Changes (Reversible Changes):

- Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.
- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
- Demonstrate that dissolving, mixing and changes of state are reversible changes.
- Changes can occur when different materials are mixed.
- Some material changes can be reversed and some cannot.
- Recognise that dissolving is a reversible change.
- Distinguish between melting and dissolving.
- Mixtures of solids (of different particle size) can be separated by sieving.
- Mixtures of solids and liquids can be separated by filtering if the solid is insoluble (un-dissolved).
- Evaporation helps us separate soluble materials from water.
- Changes to materials can happen at different rates (factors affecting

evidence of this.
 The Sun appears to move across the sky from East to West and this causes shadows to change during the day.
 Changes to shadow length over a day or changes to sunrise and sunset times over a year are evidence supporting the movement of the Earth.

Pupils might work scientifically by:

- Comparing the time of day at different places on the Earth through internet links and direct communication.
 - Creating simple models of the solar system.
 - Constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day.
- Finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.

-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.

Pupils should be taught to:

- 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 the light that 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.

Pupils might work scientifically by:

- Deciding [observe/explore] where to place rear-view mirrors on cars.
- Designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works.
- Investigating the relationship between light sources, objects and shadows by using shadow puppets.
- Extend their experience [explore and observe] of light by looking at a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).

data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. / Use test results to make predictions to set up further comparative and fair tests.

-identify the effects of air resistance, water resistance and friction, that act between moving surfaces

- Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.
- There are different types of forces (push, pull, friction, air resistance, water resistance, magnetic forces, gravity).
- Gravity can act without direct contact between the Earth and an object.
- Friction, air resistance and water resistance are forces which slow down moving objects.
- Friction, air resistance and water resistance can be useful or unwanted.
- The effects of friction, air resistance and water resistance can be reduced or increased for a preferred effect.
- More than one force can act on an object simultaneously (either reinforcing or opposing each other).

Lesson 6: Make a simple see-saw – A lever

- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. / Use test results to make predictions to set up further comparative and fair tests.

Summer Term 2:

TOPIC 4: LET'S GET MOVING (Y5) continued

Lesson 1: Using pulleys (p.71)

loudness of buzzers and the on/off position of switches.

	<p>common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</p> <ul style="list-style-type: none"> Give reasons for classifying plants and animals based on specific characteristics. <p>Lesson 6: Carl Linnaeus (p.14)</p> <ul style="list-style-type: none"> describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. give reasons for classifying plants and animals based on specific characteristics. / Identify scientific evidence that has been used to support or refute ideas or arguments <p>-give reasons for classifying plants and animals based on specific characteristics.</p> <p>Environment- Classification:</p> <ul style="list-style-type: none"> Living things can be grouped into micro-organisms, plants and animals Vertebrates can be grouped as fish, amphibians, reptiles, birds and mammals. Invertebrates can be grouped as snails and slugs, worms, spiders and insects. Plants can be grouped as flowering plants (incl. trees and grasses) and non-flowering plants (such as ferns and mosses). <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Using classification systems and keys. Identifying some animals and plants in the immediate environment. 	<p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Exploring the work of scientists. Scientific research about the relationship between diet, exercise, drugs, lifestyle and health. <p>*Additional suggestion beyond NC2014 to support pupils working scientifically and to provide an opportunity to use ICT to collect/interpret data</p> <p>Observing/Measuring changes to breathing, heartbeat and or pulse rates after exercise.</p>		<p>dissolving, factors affecting evaporation – amount of liquid, temperature, wind speed). Freezing, melting and boiling changes can be reversed (revision from YR4).</p> <p>Spring Term 1: TOPIC 2: MATERIAL WORLD (Y5) continued Lesson 1: Plastic from Milk (This lesson has not been taken from 'Switched on Science') (STEM Challenge) Lesson plans</p> <ul style="list-style-type: none"> 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. <p>-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.</p> <p>Temperature and Thermal Insulation:</p> <ul style="list-style-type: none"> Heat always moves from hot to cold. Some materials (insulators) are better at slowing down the movement of heat than others. Objects/liquids will warm up or cool down until they reach the temperature of their surroundings. <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Carry out tests to answer questions such as 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?' <p>Compare materials in order to make a switch in a circuit.</p> <p>Material Changes (Irreversible Changes):</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Observing and comparing the changes that take place, for example, when burning different materials or baking bread or cakes. Researching and discussing how chemical changes have an impact on our lives, for example cooking. Discuss [research] the creative use of new materials such as polymers, super-sticky and super-thin materials. 			<ul style="list-style-type: none"> recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. / Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Lesson 2: Gear (p.72) recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. <p>-recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <ul style="list-style-type: none"> Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Exploring falling paper cones or cup-cake cases. Designing and making [exploring] a variety of parachutes. Carrying out fair tests to determine which designs are the most effective. Exploring resistance in water by making and testing boats of different shapes. Design and make artefacts that use simple levers, pulleys, gears and/or springs and explore their effects. 	
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<p style="text-align: center;">Cycle B</p>	<p>Pupils might work scientifically by:</p> <ul style="list-style-type: none">▪ They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs.▪ Observe changes in an animal over a period of time (for example, by hatching and rearing chicks).▪ Comparing how different animals reproduce and grow. <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none">▪ Researching unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.	<p>Pupils should be taught to:</p> <p>-describe the changes as humans develop to old age.</p> <p>Pupils should be taught to:</p> <p>-describe the changes as humans develop to old age.</p> <p>Animals: Human Lifecycles:</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none">▪ Describe the changes as humans develop to old age.▪ Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete. <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none">▪ Researching the gestation periods other animals and comparing them with humans.▪ By finding out and recording the length and mass of a baby as it grows.					<p>Pupils might work scientifically by:</p> <ul style="list-style-type: none">▪ Systematically identifying the effect of changing one [thing] component at a time in a circuit. <p>Designing and making a set of traffic lights, a burglar alarm or some other useful circuit</p>
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	EFYS YEAR A/B	CLASS 1 YEAR A	CLASS 1 YEAR B	CLASS 2 YEAR A	CLASS 2 YEAR B	CLASS 3 YEAR A	Class 3 Year B
Vocabulary	<p>PLANTS</p> <ul style="list-style-type: none"> ➤ Tree ➤ Plant ➤ Fruit ➤ vegetable ➤ environment ➤ soil ➤ sun ➤ water <p>ANIMALS INCLUDING HUMANS</p> <ul style="list-style-type: none"> ➤ Fish ➤ birds ➤ human ➤ Body parts <p>EVERYDAY MATERIALS</p> <ul style="list-style-type: none"> ➤ materials ➤ hard ➤ waterproof ➤ shiny <p>SEASONAL CHANGES</p> <ul style="list-style-type: none"> ➤ Autumn ➤ Spring ➤ Summer ➤ ➤ weather 	<p>PLANTS</p> <ul style="list-style-type: none"> ➤ buds ➤ bulbs ➤ deciduous ➤ evergreen ➤ trunk ➤ vegetable ➤ wild plants ➤ environment ➤ blossom ➤ petals ➤ branches <p>ANIMALS INCLUDING HUMANS</p> <ul style="list-style-type: none"> ➤ Fish ➤ amphibians ➤ reptiles ➤ birds ➤ mammals ➤ carnivore ➤ herbivore ➤ omnivore ➤ tame ➤ wild ➤ nocturnal <p>EVERYDAY MATERIALS</p> <ul style="list-style-type: none"> ➤ materials ➤ wood ➤ plastic ➤ metal ➤ liquid ➤ gas ➤ stretch ➤ stiff ➤ bend ➤ waterproof ➤ shiny <p>SEASONAL CHANGES</p> <ul style="list-style-type: none"> ➤ Autumn ➤ Spring ➤ Summer ➤ Winter ➤ fall ➤ weather ➤ temperature ➤ thermometer ➤ weather symbol ➤ deciduous ➤ coniferous 	<p>LIVING THINGS AND THEIR HABITATS</p> <ul style="list-style-type: none"> ➤ dinosaur ➤ indigenous ➤ rivers ➤ woodland ➤ ponds ➤ sea ➤ rainforest ➤ desert ➤ species ➤ microhabitats <p>ANIMALS INCLUDING HUMANS</p> <ul style="list-style-type: none"> ➤ healthy ➤ diet ➤ off-spring ➤ exercise ➤ exercise ➤ proteins ➤ carbohydrates ➤ fats ➤ nutrition ➤ survival ➤ hygiene <p>USE OF EVERYDAY MATERIALS</p> <ul style="list-style-type: none"> ➤ metal ➤ plastic ➤ Charles ➤ Macintosh ➤ John Dunlop ➤ wood ➤ squashing ➤ bending ➤ bending ➤ twisting ➤ stretching ➤ John McAdam <p>LIGHT</p> <ul style="list-style-type: none"> ➤ reflection ➤ shadows ➤ light source ➤ opaque ➤ refraction ➤ periscope ➤ nocturnal ➤ orbits ➤ convex 	<p>ANIMALS INCLUDING HUMANS</p> <ul style="list-style-type: none"> ➤ nutrition ➤ skeleton ➤ muscles ➤ diet ➤ joint ➤ pelvis ➤ cartilage ➤ rib cage ➤ tendon ➤ spine <p>ROCKS AND FORCES AND MAGNETS</p> <ul style="list-style-type: none"> ➤ fossil ➤ soil ➤ crystals ➤ sedimentary ➤ metamorphic ➤ igneous ➤ Magnetic pole ➤ organic matter ➤ attract and repel ➤ concave <p>PLANTS</p> <ul style="list-style-type: none"> ➤ roots ➤ crown ➤ deciduous ➤ evergreen ➤ blossom ➤ bulb ➤ trunk ➤ stem ➤ woodland ➤ habitat ➤ oxygen 	<p>LIVING THINGS AND THEIR HABITATS</p> <ul style="list-style-type: none"> ➤ Vertebrates ➤ Invertebrates <p>ANIMALS INCLUDING HUMANS</p> <ul style="list-style-type: none"> ➤ pancreas ➤ oesophagus ➤ intestine ➤ organ ➤ molars ➤ canine ➤ food chain ➤ predators ➤ prey ➤ salivary gland <p>STATES OF MATTER</p> <ul style="list-style-type: none"> ➤ water vapour ➤ condensation ➤ precipitation ➤ evaporation ➤ substance ➤ matter ➤ lava ➤ solid ➤ liquid ➤ gas ➤ substance <p>SOUND</p> <ul style="list-style-type: none"> ➤ vibrating ➤ pitch ➤ volume ➤ insulation ➤ outer, middle and inner ear ➤ cochlea ➤ auditory ➤ frequency ➤ hammer 	<p>LIVING THINGS AND THEIR HABITATS & ANIMALS INCLUDING HUMANS</p> <ul style="list-style-type: none"> ➤ puberty ➤ gestation ➤ classification ➤ precision ➤ reproduction ➤ teenager ➤ obese ➤ toddler ➤ embryo ➤ roots ➤ stem ➤ nutrients ➤ pollination ➤ seed dispersal ➤ fertiliser ➤ seed formation ➤ seed formation ➤ stigma ➤ anther ➤ soil <p>PROPERTIES AND MATERIALS</p> <ul style="list-style-type: none"> ➤ solubility ➤ conductivity ➤ transparency ➤ thermal ➤ evaporation ➤ dissolve ➤ bicarbonate of soda ➤ thermal ➤ filtering ➤ melting ➤ separate <p>EARTH AND SPACE</p> <ul style="list-style-type: none"> ➤ orbit ➤ solar system ➤ astronomical ➤ planet ➤ rotation ➤ spherical ➤ crescent moon ➤ gibbous moon ➤ eclipse ➤ lunar ➤ lunar <p>FORCES</p> <ul style="list-style-type: none"> ➤ friction ➤ gravity ➤ air resistance ➤ intestine ➤ water resistance ➤ levers ➤ pulleys ➤ gears ➤ parachute ➤ Galileo ➤ Newton ➤ UP THRUST 	<p>LIVING THINGS AND THEIR HABITATS</p> <ul style="list-style-type: none"> micro-organism ➤ vertebrates ➤ invertebrates ➤ species ➤ fungi ➤ monera ➤ bacteria/micro organisms ➤ Linnaean system <p>ANIMALS INCLUDING HUMANS THE CIRCULATORY SYSTEM</p> <ul style="list-style-type: none"> ➤ blood vessels ➤ drugs ➤ atriums ➤ intestine ➤ Cardiovascular ➤ ultrasound ➤ cardiologists ➤ capillaries ➤ pulse ➤ ventricles <p>EVOLUTION AND INHERITANCE</p> <ul style="list-style-type: none"> ➤ off-spring ➤ adaptation ➤ evolution ➤ inheritance ➤ palaeontologist ➤ Charles Darwin ➤ Charles Darwin ➤ genes ➤ chromosomes ➤ syndrome ➤ genotype <p>LIGHT</p> <ul style="list-style-type: none"> ➤ light wave ➤ light source ➤ concave ➤ convex ➤ filters ➤ lens ➤ retina ➤ cornea ➤ iris ➤ pupil <p>ELECTRICITY</p> <ul style="list-style-type: none"> ➤ circuit ➤ buzzers ➤ conductor ➤ battery ➤ cells ➤ switch ➤ socket ➤ appliance ➤ appliance ➤ series circuit ➤ insulator ➤ conductor ➤ insulator ➤ socket ➤ series circuits ➤ cells ➤ volts ➤ generator ➤ turbine ➤ fuses ➤ Thomas Edison

