

Science - End Points Planning Document



Our Vision: Develop scientific knowledge and conceptual understanding through biology, chemistry and physics so that they can answer scientific questions about the world around them. To enable them to understand the uses and implications of science, today and for the future; teaching them to be able to inquire and question.

National Curriculum Objectives Substantive Knowledge	Disciplinary Knowledge: Progressive skills	Disciplinary Knowledge: Progressive skills	Progressive vocabulary and Resources
	Progressive skills may be used to support End Points. This will depend on cohort and class needs	End Points are our objectives that all children will work towards to achieve subject outcomes.	

EYFS

Scientific Enquiry (also linked to CofETL)	Understanding the World (UW)	
<ul style="list-style-type: none"> • Provide children with have frequent opportunities for outdoor play and exploration. • Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them during hands-on experiences. • Encourage focused observation of the natural world. • Listen to children describing and commenting on things they have seen whilst outside, including plants and animals. • Encourage positive interaction with the outside world, offering children a chance to take supported risks, appropriate to themselves and the environment within which they are in. 	<p>ELG: The Natural World (Statutory) Children at the expected level of development will:</p> <ul style="list-style-type: none"> • Explore the natural world around them, making observations and drawing pictures of animals and plants; • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. 	<p>Science, experiment, investigation, test, why, senses, world, plants (leaf, stem, root, flower, seeds), animals, humans, materials, see through, push/pull (linked to exploration of magnets and forces), natural, change, grow, decay, rot, environment</p> <p>Images of plants and animals, stories and non-fiction books, real plants, ice, water, collection tubs, hand lenses.</p>

Year 1

<p>Y1 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:</p> <ul style="list-style-type: none"> ○ asking simple questions and recognising that they can be answered in different ways ○ observing closely, using simple equipment ○ performing simple tests ○ identifying and classifying ○ using their observations and ideas to suggest answers to questions ○ gathering and recording data to help in answering questions. 	<p>Working Scientifically Can I ask simple questions and know that there can be more than one answer? Can I use simple equipment to look very closely at things so I can understand them better? Can I test things in simple ways? Can I identify different things in science and group similar ones together? Can I use what I have seen and think to help me when I answer questions? Can I find information and write it down which helps me when I have to answer questions?</p>	<p>Working Scientifically Can I recognise the difference between a questions and a statement? Can I use different stems to shape my questions? Can I use a hand lens to see things more clearly? Can I use binoculars to see things in the distance? Can I suggest the next step, or sequence of steps, in a plan? Can I group things according to a criteria I have been asked to consider, e.g. plants and animals? Can I tell if my test has been successful and can say what I have learnt?</p>	<p>Working Scientifically question, answer, statement, hand lens, binoculars, observe, equipment, identify, classify, sort, group, record, diagram, chart, data, compare, contrast, describe, results, experiment</p> <p>binoculars, hand lens, tubs for collection, images of plants and animals</p>
<p>Plants</p> <ul style="list-style-type: none"> ○ 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 	<p>Plants Can I name some plants that I often see in the garden and countryside as well as some trees that drop their leaves and some that don't? Can I understand the inside of some plants and trees and how they grow which I can explain to others? Can I identify and describe basic structure of common flowering plants including trees?</p>	<p>Plants Can I name a variety of common wild and garden plants? Can I name the petals, stem, leaves and root of a plant? Can I name the roots, trunk branches and leaves of a tree?</p>	<p>Plants deciduous, evergreen trees, leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem</p> <p>plants, hand lens, binoculars, images of plants</p>
<p>Animals, including humans</p> <ul style="list-style-type: none"> ○ 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 	<p>Animals, including humans Can I identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammal? Do I know the names of animals I often see which eat meat, others that eat vegetables and some that eat both?</p>	<p>Animals, including humans Can I name a variety of common animals including fish, amphibians, reptiles, birds and mammal? Can I classify and know animals by what they eat (carnivore, herbivore and omnivore)?</p>	<p>Animals, including humans fish, reptiles, mammals, birds, amphibians (+ examples of each) herbivore, omnivore, carnivore, leg, arm, elbow, head, ear, nose, back, wings, beak</p> <p>images of animals, living and non-living things, images of body parts</p>

<ul style="list-style-type: none"> describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense 	<p>Can I describe the different shape and form of a number of animals that I often see including my pets? Do I know the parts of the human body? Can draw a picture of it and name the parts. Do I know which part of the body lets me hear, taste and smell?</p>	<p>Can I sort animals into categories (including fish, amphibians, reptiles, birds and mammals)? Can I sort living and non-living things? Can I name the parts of the human body that I can see? Can I link the correct part of the human body to each sense?</p>	
<p>Everyday Materials</p> <ul style="list-style-type: none"> 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 	<p>Everyday Materials</p> <p>Do I know that the name of an object and name the material it is made from will be different? Do I know the name of some materials I see every day, including wood, plastic, glass, metal, water, and rock? Can I describe the simple physical properties of a variety of everyday materials? Can I compare the simple physical properties of a variety of everyday materials and group similar ones together?</p>	<p>Everyday Materials</p> <p>Can I distinguish between an object and the material it is made from? Can I name the material that an object is made from? Can I explain difference between wood, plastic, glass, metal, water and rock? Can I describe the properties of everyday materials? Can I group objects based on the materials they are made from?</p>	<p>Everyday Materials wood, plastic, glass, paper, water, metal, rock, hard, soft, bendy, rough, smooth A variety of materials (wood, plastic, glass, metal, water, rock)</p>
<p>Seasonal Changes</p> <ul style="list-style-type: none"> observe changes across the 4 seasons observe and describe weather associated with the seasons and how day length varies 	<p>Seasonal Changes</p> <p>Can I notice and describe the changes that happen from Spring to Summer to Autumn and into Winter? Do I know what weather we might find in spring, summer, autumn and winter? Do I know winter days are shorter than summer days?</p>	<p>Seasonal Changes</p> <p>Can I observe and know about the changes in the seasons? Can I name the seasons and know about the type of weather in each season?</p>	<p>Seasonal Changes summer, spring, autumn, winter, sun, day, moon, night, light, dark</p>
Year 2			
<p>Y2 Working Scientifically Pupils should be taught to use the following practical scientific methods, processes and skills through the</p>	<p>Working Scientifically Can I ask simple questions and know that there can be more than one answer?</p>	<p>Working Scientifically Can I suggest my own questions for investigation, e.g. Why do some trees lose their leaves in Autumn and others</p>	<p>Working Scientifically question, answer, statement, thermometer, rain gauge, observe, equipment, identify, classify, sort,</p>

<p>teaching of the programme of study content:</p> <ul style="list-style-type: none"> ○ asking simple questions and recognising that they can be answered in different ways ○ observing closely, using simple equipment ○ performing simple tests ○ identifying and classifying ○ using their observations and ideas to suggest answers to questions ○ gathering and recording data to help in answering questions. 	<p>Can I use simple equipment to look very closely at things so I can understand them better?</p> <p>Can I test things in simple ways?</p> <p>Can I identify different things in Science and group similar ones together?</p> <p>Can I use what I have seen and think to help me when I answer questions?</p> <p>Can I find information and write it down which helps me when I have to answer questions?</p>	<p>do not? Why do some animals have underground habitats?</p> <p>Can I decide which questions can be answered practically and which cannot?</p> <p>Can I choose appropriate equipment from a selection to make observations, e.g. thermometers and rain gauges?</p> <p>Can I use a microscope to find out more about small creatures and plants?</p> <p>Can I follow instructions to use equipment safely?</p> <p>Can I describe the observations and measurements I might need to make?</p> <p>Can I describe observations and use measures to help me find out more and answer questions?</p> <p>Can I recognise the links between cause and effect in familiar situations?</p>	<p>group, record, diagram, chart, data, compare, contrast, describe, results, observations, experiment, investigation, practical, cause, effect</p> <p>thermometer, magnet, torch, microscope, rain gauges. rulers</p>
<p>Living things and their habitats</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ○ 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 their habitats, including microhabitats ○ describe how animals obtain their food from plants and other 	<p>Living things and their habitats</p> <p>Can I explore and compare the differences between things that are living, dead, and things that have never been alive?</p> <p>Can I understand the simple food chain and identify and name different places to get food?</p> <p>Can I describe how animals get their food from plants and other animals?</p>	<p>Living things and their habitats</p> <p>Can I identify things that are living, dead and never lived?</p> <p>Can I explain how a specific habitat provides for the basic needs of things living there (plants and animals)?</p> <p>Can I identify and name plants and animals in a range of habitats?</p> <p>Can I match living things to their habitat?</p> <p>Can I explain how animals find their food?</p> <p>Can I name different sources of food for animals?</p> <p>Can I use a simple food chain?</p>	<p>Living things and their habitats</p> <p>living, dead, habitat, energy, food chain, predator, prey, woodland, pond, desert</p> <p>images of living, dead and never lived, images of plants and animals, hand lens</p>

animals, using the idea of a simple food chain, and identify and name different sources of food			
<p>Animals, including humans</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including 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>Animals including humans</p> <p>Can I talk about animals and human babies and how they grow?</p> <p>Can I describe what animals and humans need to survive?</p> <p>Can I describe that exercise, eating the right amounts of different types of food, and hygiene are all important for humans?</p>	<p>Animals including humans</p> <p>Can I understand the basic stages in a life cycle for animals including humans?</p> <p>Can I explain what animals and humans need to survive?</p> <p>Can I explain exercise, a balanced diet and good hygiene are important for humans?</p>	<p>Animals including humans</p> <p>survival, water, air, food, adult, baby, offspring, kitten, calf, puppy, exercise, hygiene</p>
<p>Uses of everyday materials.</p> <p>Pupils should be taught to</p> <ul style="list-style-type: none"> 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 	<p>Uses of everyday materials</p> <p>Can I talk about which everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard are suitable for particular uses?</p> <p>Can I talk about how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching?</p>	<p>Uses of everyday materials</p> <p>Can I identify and name a range of materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard?</p> <p>Can I explain why a material might or might not be used for a specific job?</p> <p>Can I describe how materials can be changed by squashing, bending, twisting and stretching?</p>	<p>Uses of everyday materials</p> <p>hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, waterproof, absorbent, opaque, transparent brick, paper, fabrics, squashing, bending, twisting, stretching elastic, foil</p> <p>a variety of materials (wood, metal, plastic, glass, brick, rock, paper and cardboard)</p>
<p>Plants</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<p>Plants</p> <p>Can I describe how seeds and bulbs grow into mature plants?</p> <p>Can I describe what plants need and to grow and stay healthy?</p>	<p>Plants</p> <p>Can I describe how seeds and bulbs grow into plants?</p> <p>Can I say what plants need in order to grow and stay healthy (water, light & and suitable temperature)?</p>	<p>Plants</p> <p>seeds, bulbs, water, light, temperature, growth</p> <p>seeds, bulbs, planting equipment, thermometer, use the school greenhouse</p>
Year 3			
Working Scientifically	Working Scientifically	Working Scientifically	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:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Can I ask relevant questions and use different types of scientific enquiry to answer them?

Can I set up simple practical enquiries, comparative and fair tests?

Can I make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers?

Can I gather, record, classify and presenting data in a variety of ways to help in answering questions?

Can I record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables?

Can I report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions?

Can I use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions?

Can I identify differences, similarities or changes related to simple scientific ideas and processes? Can I use straightforward scientific evidence to answer questions or to support their findings?

Can I suggest questions for investigations, e.g. Why does my shadow change during the day? Where does a fossil come from?

Can I describe the observations or measurements I need to make and can spot when a plan will lead to an unfair test?

Can I set up a fair test with different variables?

Can I select from a range of equipment the best items to use?

Can I use a data logger to check the lightness and darkness of a room?

Can I recall that there are two main scales?

Can I use basic equipment correctly, safely and accurately?

Can I gather and record information using a chart, matrix or tally chart depending on which is most sensible. I group information according to common factors?

Can I use diagrams, keys, bar charts and tables. I can link cause and effect when describing my observations, e.g. 'When we heated the chocolate it changed from a solid to a liquid and

relevant questions, scientific enquiry, comparative, fair test, systematic, observation, measurements, thermometer, data loggers, data, gather, record, classify, present, labelled diagrams, keys, bar charts, tables, explanations, conclusions, predictions, differences, similarities, changes, evidence, improve, secondary sources, guides, keys, construct, interpret **thermometer, torch, data logger (light and dark) scales, chocolate, heat source**

<ul style="list-style-type: none"> ○ identifying differences, similarities or changes related to simple scientific ideas and processes ○ using straightforward scientific evidence to answer questions or to support their findings. 		<p>melted. If we put it in the fridge or leave it, it will go hard again?</p> <p>Can I recall that when I make a prediction there is a plausible reason as to why I have done so?</p> <p>Can I describe what has happened making comparisons where appropriate?</p>	
<p>Plants</p> <ul style="list-style-type: none"> ○ identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers ○ 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 	<p>Plants</p> <p>Can I identify and describe the different parts of a plant?</p> <p>Can I describe the requirements of plants for life and growth and how these can vary from plant to plant?</p> <p>Can I describe the way water is transported within plants?</p> <p>Can I describe the lifecycle of a flowering plant including pollination, seed formation and seed dispersal?</p>	<p>Plants</p> <p>Can I describe the function of different parts of flowering plants and trees?</p> <p>Can I explain what different plants need to help them survive?</p> <p>Can I explain how water is transported within plants?</p> <p>Can I explain the plant life cycle, especially the importance of flowers?</p>	<p>Plants</p> <p>air, light, water, nutrients, soil, reproduction, transportation, dispersal, pollination, flower</p> <p>a selection of plants and images of plants and animals, jars, water, thermometer, food dye</p>
<p>Animals, including humans</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 ○ identify that humans and some other animals have skeletons and 	<p>Animals including humans</p> <p>Can I identify that animals need the right food and amount of food and that they cannot make their own food?</p> <p>Can I recognise that animals get their nutrition from the food that they eat?</p> <p>Can I identify why humans and animals have skeletons and muscles?</p>	<p>Animals including humans</p> <p>Can I explain the importance of a nutritious, balanced diet?</p> <p>Can I explain how nutrients, water and oxygen are transported within animals and humans?</p> <p>Can I describe the skeletal system of a human?</p> <p>Can I describe the muscular system of a human?</p>	<p>Animals including humans</p> <p>movement, muscles, bones, skull, nutrition, skeletons</p> <p>images of the skeleton, skeleton</p>

<p>muscles for support, protection and movement</p>		<p>Can I explain the purpose of the skeleton in humans and animals?</p>	
<p>Rocks 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>Rocks I describe in simple terms how fossils are formed when things that have lived are trapped within rock (formation of sedimentary rocks?) Can I recognise that soils are made from rocks and organic matter? Can I raise and answer questions about the way soils are formed? Can I compare and group together rocks based on various characteristics? Can I describe how soils are formed?</p>	<p>Rocks Can I compare and group rocks based on their appearance and physical properties giving a reason? Can I explain how fossils are formed? Can I explain how soil is made? Can I explain the difference between sedimentary, metamorphic and igneous rock?</p>	<p>Rocks fossils, soils, sandstone, granite, marble, pumice, crystals, absorbent types of rocks, magnifying glasses, fossils</p>
<p>Light 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 ○ notice that light is reflected from surfaces ○ recognise that light from the sun can be dangerous and that there are ways to protect their eyes ○ recognise that shadows are formed when the light from a light source is blocked by an opaque object <p>find patterns in the way that the size of shadows change</p>	<p>Light Can I explain why we need light to see and that dark is the absence of light? Can I explain how we see things? i.e. Light is reflected from surfaces Can I explain why light from the sun can be dangerous and how we protect our eyes? Can I explain how shadows are formed? Can I find and describe patterns in the way that the size of shadows changes?</p>	<p>Light Can I explain what dark is (the absence of light)? Can I explain that light is needed in order to see? Can I explain that light is reflected from a surface? Can I demonstrate how a shadow is formed? Can I explain shadow size and how a shadow change? Can I explain the danger of direct sunlight and describe how to keep protected?</p>	<p>Light light, shadows, mirror, reflective, dark, reflection torch, puppets for shadows, mirror</p>
<p>Forces and magnets</p> <ul style="list-style-type: none"> ○ compare how things move on different surfaces ○ notice that some forces need contact between 2 objects, but 	<p>Forces and magnets Can I compare how different things move on different surfaces? Can I describe how some forces need contact between 2 objects?</p>	<p>Forces and magnets Can I understand and describe how objects move on different surfaces? Can I explain that some forces require contact and some do not, giving examples?</p>	<p>Forces and magnets magnetic, force, contact, attract, repel, friction, poles, push, pull magnets, metals and non-metals, a variety of surfaces</p>

<p>magnetic forces can act at a distance</p> <ul style="list-style-type: none"> ○ observe how magnets attract or repel each other and attract some materials and not others ○ 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 ○ describe magnets as having 2 poles <p>predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p>	<p>Can I describe how magnets act at a distance?</p> <p>Can I observe how magnets behave?</p> <p>Can I compare and group together materials that are magnetic?</p> <p>Can I identify magnetic objects?</p> <p>Can I describe the properties of magnets?</p>	<p>Can I explain how objects attract and repel in relation to objects and other magnets?</p> <p>Can I predict whether objects will be magnetic and carry out an enquiry to test this out?</p> <p>Can I explain how magnets work?</p> <p>Can I predict whether magnets will attract or repel and give a reason?</p>	
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Year 4

<p>Y4 Working Scientifically</p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> ○ asking relevant questions and using different types of scientific enquiries to answer them ○ setting up simple practical enquiries, comparative and fair tests ○ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers ○ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions 	<p>Working Scientifically</p> <p>Can I ask relevant questions and use different types of scientific enquiry to answer them?</p> <p>Can I set up simple practical enquiries, comparative and fair tests?</p> <p>Can I make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers?</p> <p>Can I gather, record, classify and presenting data in a variety of ways to help in answering questions?</p> <p>Can I record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables?</p> <p>Can I report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions?</p>	<p>Working Scientifically</p> <p>Can I ask relevant scientific questions, e.g. Why are steam and ice the same thing?</p> <p>Can I show how to set up a fair test and explain why it is fair?</p> <p>Can I show how to set up a test to compare two things, e.g. I test to see which of two instruments make the highest or lowest sounds?</p> <p>Can I show how to use equipment, including thermometers and data loggers to make measurements (e.g. time it takes ice to melt to water in different temperatures)?</p> <p>Can I gather and record information using a chart, matrix or tally chart depending on which is most sensible?</p> <p>Can I group information according to common factors (e.g. materials that make good conductors or insulators)?</p> <p>Can I use diagrams, keys, bar charts and tables?</p>	<p>Working Scientifically</p> <p>relevant questions, scientific enquiry, comparative, fair test, systematic, observation, measurements, thermometer, data loggers, data, gather, record, classify, present, labelled diagrams, keys, bar charts, tables, explanations, conclusions, predictions, differences, similarities, changes, evidence, improve, secondary sources, guides, keys, construct, interpret</p> <p>thermometer, torch, data logger (light and dark) scales, materials (insulators and conductors)</p>
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<ul style="list-style-type: none"> ○ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables ○ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions ○ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions ○ identifying differences, similarities or changes related to simple scientific ideas and processes ○ using straightforward scientific evidence to answer questions or to support their findings. 	<p>Can I use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions?</p> <p>Can I identify differences, similarities or changes related to simple scientific ideas and processes? Can I use straightforward scientific evidence to answer questions or to support their findings?</p>	<p>Can I explain to others what I have found out?</p> <p>Can I present my findings using written explanations and diagrams when needed?</p> <p>Can I make sense of my findings and draw conclusions which helps me understand more about the scientific information I have learned?</p> <p>Can I make a general statement about simple patterns evident in a set of results.</p> <p>Can I make suggestions about how things could be improved?</p> <p>Can I make a prediction and know there is a plausible reason as to why I have done so?</p> <p>Can I make further predictions based on actual results?</p> <p>Can I amend my prediction according to my findings?</p> <p>Can I identify differences, similarities and changes related to an enquiry?</p> <p>Can I change my ideas as a result of what I have found out during a scientific enquiry?</p>	
<p>Living things and their habitats Pupils should be taught to:</p> <ul style="list-style-type: none"> ○ recognise that living things can be grouped in a variety of ways ○ explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment ○ recognise that environments can change and that this can 	<p>Living things and their habitats</p> <p>Can I recognise that living things can be grouped in different ways?</p> <p>Can I use classification keys to identify a variety of living things in the local and wider environment?</p> <p>Can I recognise that environments can change and that this can sometimes pose a threat to living things?</p>	<p>Living things and their habitats</p> <p>Can I group living things in different ways?</p> <p>Can I use classification keys to group, identify and name living things?</p> <p>Can I create classification trees to group identify and name living things (for others to use)?</p> <p>Can I explain how changes to an environment could endanger living things)?</p>	<p>Living things and their habitats vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, snails, slugs, worms, spiders, insects, environment, habitats</p> <p>images of living things</p>

<p>sometimes pose dangers to living things</p>			
<p>Animals, including humans 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 including humans Can I describe the simple functions of the basic parts of the digestive system in humans? Can I identify the different types of teeth in humans and their simple functions? Can I construct and interpret a variety of food chains? Can I identify producers, predators and prey?</p>	<p>Animals including humans Can I identify and name the parts of the human digestive system? Can I describe the functions of the organs in the human digestive system? Can I identify and know the different types of teeth in humans? Can I explain the functions of different human teeth? Can I use food chains to identify producers, predators and prey? Can I construct food chains to identify producers, predators and prey?</p>	<p>Animals including humans mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, herbivore, carnivore, canine, incisor, molar</p> <p>teeth models, toothbrush, toothpaste,</p>
<p>States of matter 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 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) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature 	<p>States of matter Y4 PROGRESSIVE SKILLS Can I compare and group materials according to whether they are solids, liquids or gases? Can I observe materials that change state when they are heated or cooled? Can I measure or research the temperature that a change of state occurs? Can I identify evaporation/condensation in the water cycle and associate this with the rate of evaporation with temperature?</p>	<p>States of matter Can I compare and group materials based on their state of matter (solid, liquid, gas)? Can I explain how some materials change state? Can I explore how materials change state? Can I measure the temperature at which materials change state? Can I give a simple explanation of the water cycle? Can I explain the part played by evaporation and condensation in the water cycle?</p>	<p>States of matter Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating</p> <p>Examples of solids, liquids and gases, containers, ways to heat and cool, thermometer</p>
<p>Sound Pupils should be taught to:</p> <ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating 	<p>Sound Can I explain how sounds are made? i.e. Vibrations Can I recognise that vibrations from sounds travel through a medium to the ear?</p>	<p>Sound Can I explain how sound is made? Can I describe how sound waves travel from a source to our ears? Can I explain how sounds are made associating some of them with vibrating?</p>	<p>Sound volume, vibration, wave, pitch, tone, speaker</p> <p>sound examples, tuning forks for pitch, models of vibrations</p>

<ul style="list-style-type: none"> ○ recognise that vibrations from sounds travel through a medium to the ear ○ 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 ○ recognise that sounds get fainter as the distance from the sound source increases 	<p>Can I find patterns between the pitch of a sound and features of the object that produces it?</p> <p>Can I find patterns between the volume of a sound and the strength of the vibrations that produced it?</p> <p>Can I recognise that what happens to sound as they are moved away from the sound source?</p>	<p>Can I describe the correlation between pitch and the object producing a sound?</p> <p>Can I describe the correlation between the volume of a sound and the strength of the vibrations that produced it?</p> <p>Can I explain what happens to a sound as it travels away from its source?</p>	
<p>Electricity Pupils should be taught to:</p> <ul style="list-style-type: none"> ○ identify common appliances that run on electricity ○ 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 ○ 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 some common conductors and insulators, and associate metals with being good conductors 	<p>Electricity</p> <p>Can I identify common appliances that run on electricity?</p> <p>Can I make and identify the parts of a simple series circuit?</p> <p>Can I investigate different circuits where a bulb will or will not light up?</p> <p>Can I recognise what a switch does in a circuit and whether it allows a bulb to light up?</p> <p>Can I identify insulators and conductors and explain why they do this?</p>	<p>Electricity</p> <p>Can I identify and name appliances that require electricity to function?</p> <p>Can I construct a series circuit?</p> <p>Can I identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers)?</p> <p>Can I draw a circuit diagram?</p> <p>Can I predict and test whether a lamp will light within a circuit?</p> <p>Can I describe the function of a switch in a circuit?</p> <p>Can I explain the difference between a conductor and an insulator, giving examples of each?</p>	<p>Electricity cells, wires, bulbs, switches, buzzers, battery, circuit, series, conductors, insulators</p> <p>cells, wires, bulbs, switches, buzzers, battery, circuit, series, conductors, insulators</p>
Year 5			
<p>Y5 Working Scientifically Pupils should be taught to use the following practical scientific methods, processes and skills through the</p>	<p>Working Scientifically Can I plan different types of scientific enquiry to answer questions?</p>	<p>Working Scientifically Can I explore ideas and raise different kinds of questions?</p>	<p>Working Scientifically variables, scientific enquiry, fair test, control, measure, accurate, precise, repeat readings, data, prediction,</p>

<p>teaching of the programme of study content:</p> <ul style="list-style-type: none"> ○ 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 ○ 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 ○ identifying scientific evidence that has been used to support or refute ideas or arguments. 	<p>Can I take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate?</p> <p>Can I record data and results of increasing complexity using scientific diagrams and labels etc?</p> <p>Can I report and present 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?</p> <p>Can I identify scientific evidence that has been used to support or refute ideas or arguments?</p>	<p>Can I set up an investigation when it's appropriate, e.g., finding out which materials dissolve or not?</p> <p>Can I set up a fair test?</p> <p>Can I set up an enquiry-based investigation, e.g., find out what we can do now that we couldn't do as a baby?</p> <p>Can I describe what the variables are and can isolate each one?</p> <p>Can I measure accurately, including capacity and mass?</p> <p>Can I use scientific instruments as needed, including spring scales for measuring Newtons?</p> <p>Can I choose the most appropriate format to present my data?</p> <p>Can I use the data I have generated to make sense of my investigations?</p> <p>Can I make predictions from the information?</p> <p>Gleaned from my investigations.</p> <p>Can I create new investigations which take account of what I have learned previously?</p> <p>Can I present my findings in a range of ways, e.g. writing, diagrams, orally?</p> <p>Can I evaluate when explaining my findings?</p> <p>Can I relate causal relationships when studying life cycles?</p> <p>Can I support my conclusions with evidence?</p> <p>Can I give an example of something I have focused on when supporting a scientific theory?</p>	<p>hypothesis, comparative and fair test, conclusion, diagrams, labels, classification keys, tables, scatter graphs, bar graphs, line graphs, interpret, comparative, causal relationship, degree of trust, support, refute, identify, classify, describe, patterns, systematic, quantitative measurements, spring scale,</p> <p>thermometer, torch, data logger (light and dark) scales, spring scales – newton meter</p>
<p>Animals including humans Pupils should be taught to:</p>	<p>Animals including humans</p>	<p>Animals including humans</p>	<p>Animals including humans</p>

<ul style="list-style-type: none"> ○ describe the changes as humans develop to old age 	<p>Can I describe the changes as humans develop to old age?</p>	<p>Can I create a timeline to indicate stages of growth in humans?</p>	<p>foetus, embryo, womb, gestation, baby, toddler, teenager, elderly, growth, development, puberty</p>
<p>Living things and their habitats Pupils should be taught to:</p> <ul style="list-style-type: none"> ○ describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird ○ describe the life process of reproduction in some plants and animals 	<p>Living things and their habitats Can I describe the differences in the life cycles of a mammal, amphibian, insect and bird? Can I describe the life process of reproduction in some plants and animals?</p>	<p>Living things and their habitats Can I comment on the life cycle of different animals, e.g., mammal, amphibian, insect bird? Can I explain the difference between different life cycles? Can I explain the process of reproduction in plants? Can I explain the process of reproduction in animals?</p>	<p>Living things and their habitats Mammal, Reproduction, Insect, Amphibian, Bird, Offspring</p>
<p>Properties and changes of materials Pupils should be taught to:</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 ○ 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 ○ give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic 	<p>Properties and changes of materials Can I compare and group together everyday objects on the basis of their properties? Can I identify that some materials will dissolve in a liquid to form a solution? Can I describe how to recover a substance from a solution? Can I use my knowledge of solids, liquids and gases to decide how mixtures might be separated? E.g. filtering, sieving and evaporation Can I give reasons based on evidence from comparative and fair tests, for the particular use of everyday materials? Can I demonstrate that dissolving, mixing and changes of state are reversible changes? Can I explain that some changes result in the formation of new materials? Can I explain that not all changes are reversible? e.g. burning, action of acid on bicarbonate of soda</p>	<p>Properties and changes of materials Can I compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity (electrical & thermal) and response to magnets)? Can I explain how a material dissolves to form a solution; explaining the process of dissolving? Can I describe and show how to recover a substance from a solution? Can I explain how some materials can be separated e.g. through filtering, sieving and evaporating? Can I demonstrate that some changes are reversible and some are not? Can I explain how some changes result in the formation of a new material and this is usually irreversible? Can I explain about reversible and irreversible changes? Can I give evidenced reasons why materials should be used for specific purposes?</p>	<p>Properties and changes of materials hardness, solubility, transparency, conductivity, magnetic, filter, evaporation, dissolving, mixing</p> <p>measuring jugs, beakers, filter paper, sieves, magnets, electrical circuits with metal conductors and insulators, thermal conductors and insulators</p>

<ul style="list-style-type: none"> ○ demonstrate that dissolving, mixing and changes of state are reversible changes ○ 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>Earth and space Pupils should be taught to:</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 the sun, Earth and moon as approximately spherical bodies ○ use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky 	<p>Earth and space Can I describe the movement of the Earth and other planets relative to the sun in the solar system? Can I describe the movement of the moon relative to the Earth? Can I describe the shape of the sun, Earth and moon? Can I explain how rotation of the Earth causes day and night and the apparent movement of the sun across the sky?</p>	<p>Earth and space Can I explain the movement of the earth and other planets relative to the sun? Can I explain the movement of the moon relative to the earth? Can I demonstrate how night and day are created? Can I describe the Sun, Earth and Moon (using the term spherical)?</p>	<p>Earth and Space earth, sun, moon, axis, rotation, day, night, phases of the moon, star, constellation space resources, light sources</p>
<p>Forces Pupils should be taught to:</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 ○ identify the effects of air resistance, water resistance and friction, that act between moving surfaces ○ recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect 	<p>Forces Can I explain why unsupported objects fall towards the Earth? Can I identify the effects of air resistance? Describe effects of forces that act between moving forces Can I identify the effects of water resistance? Describe effects of forces that act between moving forces Can I identify the effects of friction? Describe effects of forces that act between moving forces Can I recognise that some mechanisms allow a smaller force to have a greater</p>	<p>Forces Can I explain what gravity is and its impact on our lives? Can I identify and know the effect of air resistance? Can I identify and know the effect of friction? Can I explain how levers, pulleys and gears allow a smaller force to have a greater effect?</p>	<p>Forces air resistance, water resistance, friction, gravity, newton, gears, pulleys newton meters, gears, pulleys, rulers</p>

effect? Work with levers, pulleys and gears. Could do through DT

Year 6

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:

- 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
- 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
- identifying scientific evidence that has been used to support or refute ideas or arguments.

Working Scientifically

Can I plan different types of scientific enquiry to answer questions?
Can I take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate?
Can I record data and results of increasing complexity using scientific diagrams and labels etc?
Can I report and present 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?
Can I identify scientific evidence that has been used to support or refute ideas or arguments?

Working Scientifically

Can I explore ideas and raise different kinds of questions?
Can I plan different types of scientific enquiry?
Can I set up a fair test?
Can I describe what the variables are in a given enquiry and know how to control them?
Can I describe what the variables are in a given enquiry and can isolate each one when investigating?
Can I measure accurately and precisely using a range of equipment as needed, e.g. thermometer, rain gauge?
Can I use measurements including capacity, mass, ratio and proportion?
Can I decide what observations and measurements to make?
Can I decide on the most appropriate formats to present sets of scientific data, such as using line graphs for continuous variables?
Can I present information in a range of ways?
Can I use data which I have generated to help make sense of my investigations?
Can I use the outcome of test results to make predictions and set up a further comparative and fair tests?
Can I make accurate predictions based in information gleaned from my investigations?

Working Scientifically

variables, scientific enquiry, fair test, control, measure, accurate, precise, repeat readings, data, prediction, hypothesis, comparative and fair test, conclusion, diagrams, labels, classification keys, tables, scatter graphs, bar graphs, line graphs, interpret, comparative, causal relationship, degree of trust, support, refute, identify, classify, describe, patterns, systematic, quantitative measurements
thermometer, torch, data logger (light and dark) scales,

		<p>Can I evaluate when explaining my findings and can identify when further tests and observations might be needed?</p> <p>I know I need to support my conclusions with evidence.</p> <p>Can I give an example of something I have focused on when supporting a scientific theory?</p> <p>Can I communicate and justify my scientific ideas and talk about how scientific ideas have developed over time?</p>	
<p>Living things and their habitats Pupils should be taught to:</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. 	<p>Living things and their habitats Can I describe how living things are classified into broad groups? Can I give reasons for classifying plants and animals that are based on specific characteristics</p>	<p>Living things and their habitats Can I classify living things into broad groups according to observational characteristics and based on similarities and differences? Can I describe how living things have been classified? Can I give reasons for classifying plants and animals in specific way?</p>	<p>Living things and their habitats classification, vertebrates, invertebrates, micro-organisms, amphibians, reptiles, mammals, insects</p>
<p>Animals including humans Pupils should be taught to:</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 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. 	<p>Animals including humans Can I identify and name the main parts of the human circulatory system and their functions? Can I recognise and explain the impact of diet, exercise, drugs and lifestyle have on the way our bodies function? Can I describe the ways in which nutrients and water are transported with animals, including humans?</p>	<p>Animals including humans Can I identify and name the main parts of the human circulatory system? Can I explain the function of the heart, blood vessels and blood? Can I explain the impact of diet, exercise, drugs and life style on health? Can I explain how to keep my body healthy and how it could be damaged? Can I explain the ways in which nutrients and water are transported in animals, including humans?</p>	<p>Animals including humans circulatory, heart, blood vessels, veins, arteries, oxygenated, deoxygenated, valve, exercise, respiration Knives, gloves, aprons, scissors</p>

<p>Evolution and inheritance</p> <p>Pupils should be taught to:</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 ○ 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>Evolution and inheritance</p> <p>Can I recognise that living things have changed over time?</p> <p>Can I explain how fossils give us information about living things from long ago?</p> <p>Can I recognise that off spring of the same kind are not identical to their parents?</p> <p>Can I explain how plants and animals adapt to their environment?</p> <p>Can I explain that adaptation can lead to evolution?</p>	<p>Evolution and inheritance</p> <p>Can I explain how the Earth and living things have changed over time?</p> <p>Can I say how fossils can be used to find out about the past?</p> <p>Can I explain how the reproduction and offspring (recognising that offspring normally vary and are not identical to their parents)?</p> <p>Can I explain how animals and plants are adapted to suit their environment?</p> <p>Can I link adaptation over time to evolution?</p> <p>Can I explain what evolution is?</p>	<p>Evolution and inheritance</p> <p>fossils, adaptation, evolution, characteristics, reproduction, genetics</p> <p>fossils</p> <p>, images of environments and adaptations</p>
<p>Light</p> <p>Pupils should be taught to:</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 ○ 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. 	<p>Light</p> <p>Can I recognise and explain how light appears to travel in straight lines?</p> <p>Can I explain the idea that objects are seen because they give out or reflect light into the eye?</p> <p>Can I explain how we see objects?</p> <p>Can I explain why shadows are different shapes?</p>	<p>Light</p> <p>Can I explain how light travels?</p> <p>Can I demonstrate how we see objects?</p> <p>Can I explain why shadows have the same shape as the object that casts them?</p> <p>Can I describe how simple optical instruments work, e.g., periscope, telescope, binoculars, mirror, magnifying glass, etc.?</p>	<p>Light</p> <p>refraction, reflection, light, spectrum, rainbow, colour, shadow</p> <p>torches, mirrors, periscope, telescope, binoculars, magnifying glass, light sources</p>
<p>Electricity</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ○ associate the brightness of a lamp or the volume of a buzzer with the 	<p>Electricity</p> <p>Can I explain the brightness of a lamp or volume of a buzzer and the association between the number and voltage of cells used in a circuit?</p>	<p>Electricity</p> <p>Can I explain how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer?</p>	<p>Electricity</p> <p>cells, wires, bulbs, switches, buzzers, battery, circuit, series, conductors, insulators, amps, volts, cell</p>

<p>number and voltage of cells used in the 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○ use recognised symbols when representing a simple circuit in a diagram.	<p>Can I compare and give reasons for variations in how components function? E.g. Brightness of bulbs, loudness of buzzers and the on/off position of switches</p> <p>Can I use recognised symbols when representing a simple circuit as a diagram?</p>	<p>Can I compare and give reasons for why components work and do not work in a circuit?</p>	<p>cells, wires, bulbs, switches, buzzers, battery, circuit, series, conductors, insulators, amps, volts, cell</p>
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