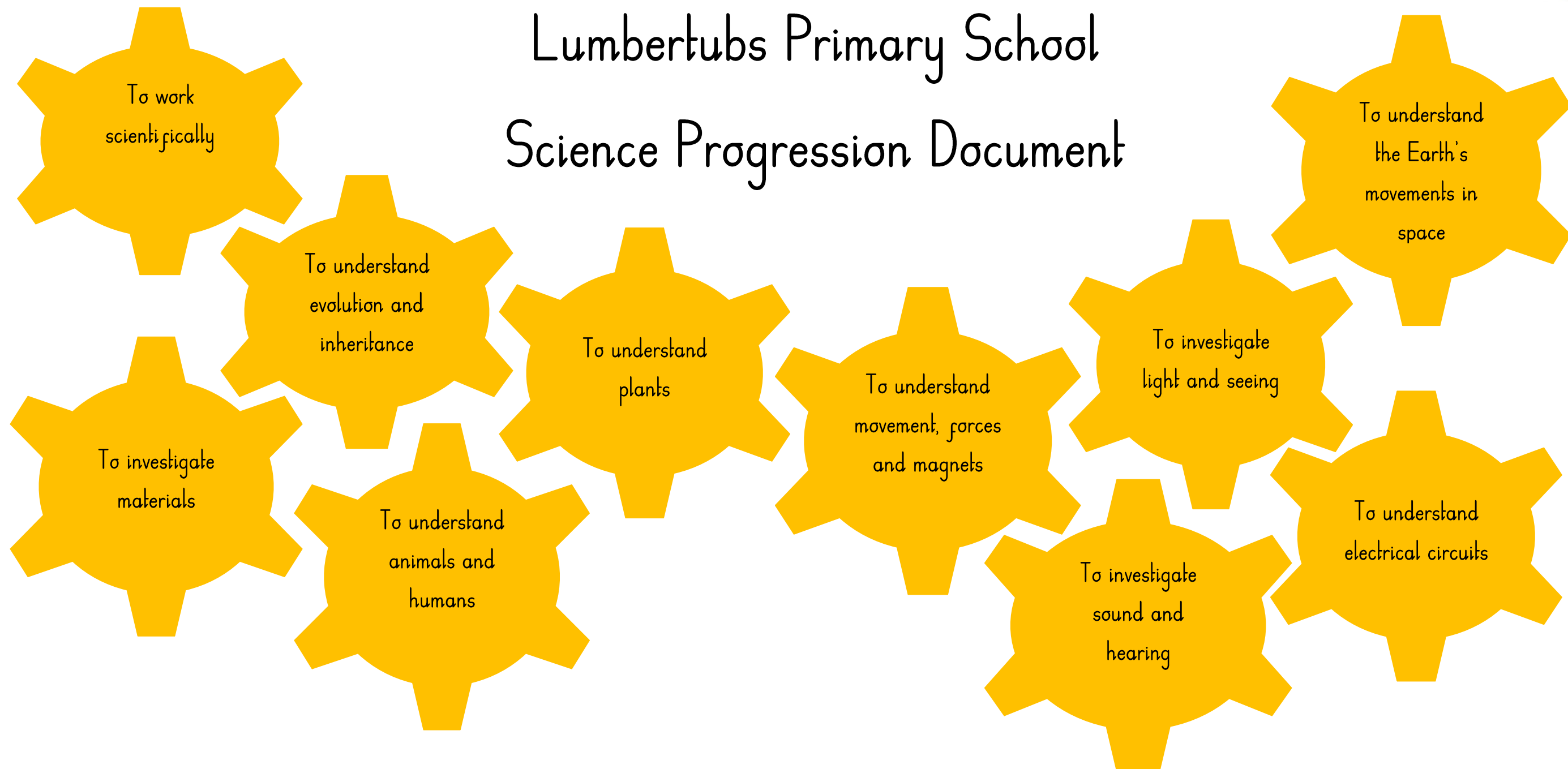


Lumbertubs Primary School

Science Progression Document



At Lumbertubs our science curriculum is designed to develop scientific knowledge and conceptual understanding. We want our children to develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them. We ensure our children are equipped with the scientific skills required to understand the uses and implications of science, today and for the future. We understand that it is important for lessons to have a skills-based focus, and that the knowledge can be taught through this and build upon and deepened through their time at Lumbertubs

Early Learning Goals	
Communication and Language Listening/ Attention and Understanding - Make comments about what they have heard and ask questions to clarify their understanding. Personal, Social and Emotional Development/ Managing Self - Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.	Understanding the World/ The Natural World - 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.
The National Curriculum – Key Stage One	The National Curriculum – Key Stage Two
During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - 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.	During years 3 and 4, 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 - identifying differences, similarities or changes related to simple scientific ideas and processes - using straightforward scientific evidence to answer questions or to support their findings. During years 5 and 6, 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.

Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To work scientifically 	• Explore through sensory experiences. • Answer how questions. • Develop their own explanations by developing ideas. Extends vocabulary by grouping and naming. • Uses talk to organise, sequence and clarify thinking and ideas.	• Explore and observe through sensory experiences. • Answer how and why questions. • Develop their own explanations by developing ideas. Extends vocabulary by grouping and naming. • Uses talk to organise, sequence and clarify thinking and ideas.	• Ask simple questions with support • Observe using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.	• Ask simple questions. • Observe closely, using simple equipment. • Perform tests. • Identify and classify. • Use observations and ideas to answer to questions. • Gather and record data in answering questions.	• Ask questions. • Set up simple, practical enquiries and comparative and fair tests. • Make measurements using standard units, using of equipment. • Gather, record, classify and present data in ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. • Report on findings from enquiries, including oral and written explanations • Use results to draw simple conclusions and suggest improvements for setting up further tests. • Identify differences, similarities related to simple, scientific ideas and processes. • Use straightforward, scientific evidence to answer questions	• Ask relevant questions. • Set up practical enquiries and comparative and fair tests. • Make accurate measurements using standard units, using a range of equipment • Gather, record, classify and present data in a variety of ways to help in answering questions. • Record findings using scientific language, drawings, labelled diagrams, bar charts and tables. • Report on findings from enquiries in a variety of ways • Use results to draw conclusions and suggest improvements, new questions and predictions for setting up further tests. • Identify differences, similarities or changes related to simple, scientific ideas and processes. • Use straightforward, scientific evidence to answer questions or to support their findings	• Plan enquiries, including recognising and controlling variables where necessary. • Use simple techniques, apparatus, and materials during fieldwork and laboratory work. • Take measurements, using a range of scientific equipment. • Record data and results using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. • Report findings from enquiries, including oral and written explanations of results. • Present findings in written form, displays and other presentations. • Use test results to make predictions • Use simple models to describe scientific ideas.	• Plan enquiries, including recognising and controlling variables. • Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. • Take measurements, using a range of scientific equipment, with increasing accuracy and precision. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. • Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions. • Present findings in written form, displays and other presentations. • Use test results to make predictions to set up further comparative and fair tests. • Use simple models to describe scientific

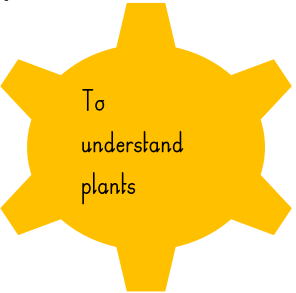


								ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.
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Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To understand animals including humans 	• Begin to understand the need to respect and care for the natural environment and all living things.	• Know about similarities and differences in relation to animals and humans • Know the importance for good health of physical exercise and a healthy diet and talk about ways to keep healthy and safe. • Make observations of animals and explain why some things occur and talk about changes. • Extends vocabulary, especially by grouping and naming	• Identify and name a variety of animals: 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 common animals (fish, amphibians, reptiles, birds and mammals) • Identify, name, draw and label the basic parts of the human body and say how each part is associated with each sense	• 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 muscles for support, protection and movement.	• 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 • identify that humans and some other animals have skeletons and muscles for support, protection and movement.	• describe the changes as humans develop to old age.	• 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

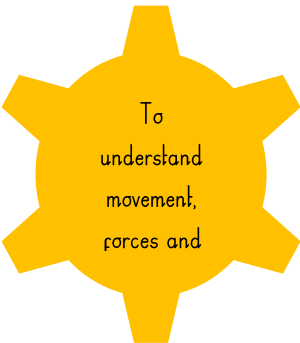
Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To understand living things and their habitats 	• Begin to understand the need to respect and care for the natural environment and all living things. • Plant seeds and care for growing plants.	• Describe what they see, hear and feel whilst outside. • Explore the natural world around them. • Listen to and talk about selected non-fiction to develop a deep familiarity with new knowledge and vocabulary. • Engage in non-fiction books.		• 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 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.		• 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 sometimes pose dangers to living things.	• 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.	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics.

Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To investigate materials 	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about the differences between materials and changes they notice.	• Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them.	• 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.	• 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.	• 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.	• 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.	• 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 • 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	

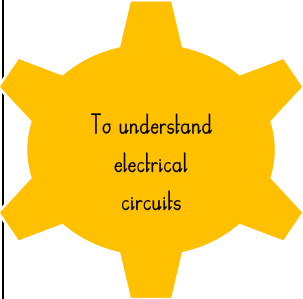
Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To understand plants 	• Use all their senses in hands-on exploration of natural materials. • Plant seeds and care for growing plants. • Plant seeds and care for growing plants. • Begin to understand the need to respect and care for the natural environment and all living things.	• Describe what they see, hear and feel whilst outside. • Explore the natural world around them. • Listen to and talk about selected non-fiction to develop a deep familiarity with new knowledge and vocabulary. • Engage in non-fiction books.	• 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	• identify how seeds and bulbs grow into plants • know how plants needs in order to grow and stay healthy	• 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			

Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To investigate light and seeing 	• observe light and dark.	• Know about similarities and differences in relation to light and dark.		• Observe and name a variety of sources of light, including electric lights, flames and the sun, explaining that we see things because light travels from them to our eyes.	• 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 • find patterns in the way that the size of shadows change.			• 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.

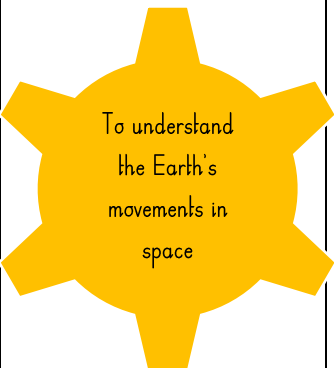


Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To understand movement, forces and magnets 	• Explore how things work. • Explore and talk about different forces they can feel.	• Describe what they see, hear and feel whilst outside. • Listen to and talk about selected non-fiction to develop a deep familiarity with new knowledge and vocabulary. • Engage in non-fiction books.	• Notice and describe how things move, using simple comparisons such as faster and slower. • Compare how different things move.		• 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 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 two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing.		• 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.	



Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To understand electrical circuits This concept involves understanding circuits and their role in electrical applications. 	• Recognise that a range of technology is used in places such as homes and schools.					• 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.		• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram.

Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To investigate sound and hearing 	Children sing songs and make music	Children sing songs and make music and experiment with ways of changing them.	Observe and name a variety of sources of sound, noticing that we hear with our ears.			- 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 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.		

Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To understand the Earth's movement in space 	Use all their senses in hands-on exploration of natural materials.	- understand the effect of changing seasons on the natural world around them. - Explore the natural world around them. - Listen to and talk about selected non-fiction to develop a deep familiarity	- Observe the apparent movement of the Sun during the day - Observe changes across the four seasons. - Observe and describe weather associated with the seasons and how day length varies.				- 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 - use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	



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Cog	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To understand evolution and inheritance 								• 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.