SCIENCE

Handford Hall Primary School

Science Whole School Topic Overview per term

KS1	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 1	Everyday materials (part of IPC)			Animals including humans (separate to IPC)		Plants and seasonal changes (part of IPC)
Year 2			Everyday materials (part of IPC)	Animals including humans (part of IPC)	Living things and their habitats (part of IPC)	Plants (separate to IPC)

KS2	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 3	Forces and magnets	Animals including humans (nutrition, muscles and skeletons)	Rocks	Light	Plants	Plants
Year 4	Sound	Living things and their habitats	States of matter	Electricity	Animals including humans (digestive system and teeth)	Animals including humans (Sex ED)
Year 5	Living things and their habitats	Forces	Earth and Space	Properties and changes of materials	Animals including humans	Animals including humans (Sex ED)
Year 6	Living things and their habitats	Evolution and Inheritance	Light	Electricity	Animals including humans	Animals including humans (Sex ED)

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These are the overall skills that children need to learn to make progress:

a. observe and explore to generate ideas, define problems and pose questions in order to develop investigations and products
b. engage safely in practical investigations and experiments and gather and record evidence by observation and measurement
c. apply practical skills to design, make and improve products safely, taking account of users and purposes
d. communicate and model in order to explain and develop ideas, share findings and conclusions
e. to continually make systematic evaluations when designing and making, to bring about improvements in processes and outcomes.

How will the children be enabled to do this? 'Breadth of Learning'

a. When investigating science and design and technology children should:

- share their expertise in subjects that interest them and respond to relevant and current issues, locally and in the national media
- apply their knowledge and understanding in real-life contexts, relating it to the world around them and visiting places to learn about science and design and
- technology
- work with experts and enthusiasts to find out how science and design and technology are used and applied in day-to-day life

b. Children should use investigations and designing and making activities to:

- explore a range of familiar and less familiar contexts, environments and products
- develop practical skills that will help them to carry out investigations and to make functional products from their design ideas
- use design and technology contexts to develop scientific understanding and apply their scientific knowledge to inform their designing and making
- work collaboratively towards a common goal by sharing ideas, making compromises, negotiating and providing feedback

c. When applying their knowledge and understanding of science and design and technology children should:

- think creatively and inventively about how things work, identify patterns and establish links between causes and effects
- test their ideas through practical activities and review their own and others' ideas and investigations, designs and products
- carry out their own investigations, deciding what kind of evidence to collect and what equipment and materials to use
- suggest the results they expect and explain their observations and the significance and limitations of the conclusions they draw

d. When developing their own design ideas children should:

- explore ways of improving designs for products, mechanisms, structures, systems and control
- investigate different materials, and use them to provide functional solutions to meet user needs, evaluating and refining their products as they work

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Year 1

Year 1 **Animals including Humans 'Human Features'**	Year 1 **Animals including Humans 'Animals'**	Year 1 **Everyday Materials**	Year 1 **Plants**	Enrichment Day **Light***	Year 1 **Seasonal Changes**
• identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	• 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, amphibians, reptiles, birds and mammals, including pets	• 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 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	• observe and name a variety of sources of light, including electric lights, flames and the Sun • associate shadows with a light source being blocked by something.	• observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies
• Can we taste when we can't smell?	• What differences are there between the skeletons of different animals?	• Which bag is most waterproof or strongest? • What material is the most hard/soft; stretchy/stiff; shiny/dull; rough/smooth or bendy?	• Do all plants have roots, stem/trunk, leaves and flowers. • What type of plants/trees are there in the school/park?	• Which is the most reflective material? • Which materials let light through? • Which torch is the brightest? • How can we make our shadows bigger?	• How does the temperature change during a week?

Key Skills

- Make simple observations
- identify and classify objects and animals
- Ask simple questions and recognise that they can be answered in different ways (eg. by practical investigation, research or survey).
- Use simple equipment such as magnifying glasses and (digital) microscopes for observation and egg timers for timing.
- Make close and careful observations over time (eg. plants growing) and, with guidance, identify patterns and relationships.
- Carry out simple tests in small groups.
- Identify features of different items and classify them accordingly (eg. hard/soft, rough/smooth, magnetic/non-magnetic).
- Suggest answers to questions based on their observations and ideas.
- Gather data and record it to help answer questions.
- Use simple scientific language relevant to the area of study and in investigations (eg. prediction, method, result, conclusion).
- Use ICT to record my observations
- Record my observations in writing and simple diagrams
- I compare observations using scientific vocabulary
- I say whether what happened was what I expected

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Year 2

Enrichment Day **Electricity***	Enrichment Day **Sound***	Year 2 **Plants**	Year 2 **Use of every day materials**	Year 2 **All living things and their habitats**	Year 2 **Animals including humans**
• 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	• observe and name a variety of sources of sound, noticing that we hear with our ears • recognise that sounds get fainter as the distance from the sound source increases.	• 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.	• 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.	• 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.	• 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.
• How does the number of batteries affect the brightness of a bulb? • How does the number of bulbs affect the brightness of a bulb?	• What size/shape makes the best ears? • What makes the best string telephones? • Which ear protector is best?	• Do plants need light in order to grow? • Will seeds grow in anything other than soil?	• When squashed, which materials return to their original shape? • What happens to materials when they are heated or cooled?	• Do wood lice prefer the light or the dark, dry or damp conditions?	• How clean are your hands? • Do people grow at the same rate?

Key Skills

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- Make close and careful observations over time (eg. plants growing) and, with guidance, identify patterns and relationships.
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- Use ICT to record my observations
- Record my observations in writing and simple diagrams
- I compare observations using scientific vocabulary
- I say whether what happened was what I expected

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Year 3

Year 3 **Rocks**	Year 3 **Light**	Year 3 **Forces and Magnets**	Year 3 **Forces and Magnets (continued)***	Year 3 **Plants**	Year 3 **Animals including Humans**
• 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.	• 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 a solid object • find patterns in the way that the size of shadows change.	• 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	• identify and describe the functions of different parts of flowering plants: roots, stem, 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.	• 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 animals have skeletons and muscles for support, protection and movement.
• How does the size of particles affect the flow rate of water through a funnel? • Which soil is best for seed germination?	• How does distance of a shadow causing object from a screen affect the size of the shadow? • How does distance from the light source affect the size of the shadow? • How does the colour of a filter affect the colour of white/blue/red/green/yellow light?	• How well does magnetism pass through or attract different materials? • Which magnet is strongest?	• Are bigger magnets stronger? • Are all metal objects attracted to a magnet?	• How does the amount of water/light/soil affect the height/number of leaves of a plant? • How is seed germination affected by seed size / temperature / moisture / soil? • How does the amount of space for roots affect the size of a plant?	• Do people with longer legs jump further/higher? • Do people with longer arms throw further? • Which is the longest bone in the body • Do people with large hands have big large feet?

Key Skills

- Use different types of scientific enquiry to answer questions
- Ask relevant questions that can be answered using a range of scientific enquiry approaches.
- Choose an appropriate approach to an enquiry (eg. fair test or observation).
- Set up simple practical enquiries using comparative and fair testing.
- Choose appropriate equipment for an investigation.
- Make systematic and careful observations using a range of equipment.
- Take accurate measurements using standard units (cm, g, oc), using a range of equipment, including thermometers and data loggers.
- Gather, record, classify and present data in a variety of ways to answer questions (eg. table, venn diagram, carroll diagram, bar chart).
- Record observations using drawings and labelled diagrams.
- Report results and conclusions orally and in writing.
- Report results and conclusions using displays and presentations.
- Identify differences, similarities or changes related to simple scientific ideas and processes
- Use scientific language, drawings, labelled diagrams, keys, bar charts, and tables with growing accuracy
- Draw simple conclusions from results and make further predictions from them based on patterns identified.
- Suggest how a method could be improved to provide more accurate results.
- Use straightforward scientific evidence to answer questions or to support their findings.

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Year 4

Enrichment Day	Year 4	Year 4	Year 4	Year 4	Year 4
Scientific Theories (Astronomy)*	**Animals including Humans**	**Sound**	**Living things and their habitats**	**Electricity**	**States of Matter**
• that the universe includes many types of galaxy, and it is expanding. • explore the ways humans learn about space. • that the force of gravity can be different • know about the planets in our solar system • describe and name some constellations.	• 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 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	• 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	• 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.	• 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.
• Why might the force of gravity be different on different planets?	• Which is the best toothpaste to clean shoe polish from a tile? • How clean are our teeth at different times during the day (Use disclosing tablets)	• What material is the most effective sound insulator? • How can you make the best string telephone?	• Are mini beasts affected by bright light? • Compare two habitats: Which has most trees/plants/minibeasts?	• How is brightness of the bulb affect by number of batteries/length of wire/thickness of wire/type of wire? • Which materials conduct electricity the best?	• How does the temperature of water affect the time for salt/sugar to dissolve? • How does the type of filtering agent alter the cleanliness of water? • Does the temperature of the water affect how much solid will dissolve in it?

Key Skills

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- Report results and conclusions using displays and presentations.
- Identify differences, similarities or changes related to simple scientific ideas and processes
- Use scientific language, drawings, labelled diagrams, keys, bar charts, and tables with growing accuracy
- Draw simple conclusions from results and make further predictions from them based on patterns identified.
- Suggest how a method could be improved to provide more accurate results.
- Use straightforward scientific evidence to answer questions or to support their findings.

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Year 5

Enrichment Day	Year 5	Year 5	Year 5	Year 5	Year 5
Sound*	**Animals including Humans**	**Earth and Space**	**Living things and their habitats**	**Properties and Changes of Materials**	**Forces**
• 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	• describe the changes as humans develop to old age	• 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	• explain 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.	• 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 changes associated with burning and the action of acid on bicarbonate of soda	• 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
• How can you amplfy sound ie make an alarm clock sound loud, shout a message across the playground?	• How does head to body ratio change as a human grows?	• How is the size of shadow affected by the time of day/distance from light source/brightness of light source? • How does the position of the Sun change during the day? • How does the shape of the moon appear to change over a month?	• What do seeds require in order to germinate? • How does the ovary of a flower change as the flower wilts?	• How is evaporation of a liquid affected by size of container/ viscosity/ moving air/ additives/ temperature? • How is boiling time of water affected by adding salt? • Do all frozen materials melt at the same temperature?	• How does type of material/weight added/shape/ making holes affect the falling time of a parachute? • What affects the time of the swing of a pendulum? • What affects the height bounced by a ball? • What affects the time for different Plasticine shapes to fall in water? • How does air resistance affect our ability to run?

Key Skills

- Identify an appropriate form of enquiry (fair testing, observation, survey, research, problem solving, classification) to answer a question.
- Work in a team to plan and carry out a science enquiry.
- Identify the equipment required to carry out an investigation.
- Identify what observations to make and how to make them using standard units where relevant.
- Recognise and control variables where necessary.
- Take accurate repeat readings of results using scientific equipment.
- Record and present data and results in a range of appropriate graphs; including bar graphs, line graphs and scatter graphs.
- Record observations using labelled scientific diagrams.
- Create a classification key using observed features.
- Use test results to make predictions that can be investigated in further comparative and fair tests.
- Report conclusions in oral and written forms.
- Identify causal relationships from results and explain what they mean.
- Comment upon the trustworthiness of results and how their accuracy could be improved.
- Identify scientific evidence that use been used to support or refute ideas or arguments.
- Use appropriate scientific language
- Suggest improvements to my work and give reasons

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Year 6

Year 6 **Evolution and Inheritance**	Year 6 **Animals including Humans**	Year 6 **Living things and their habitats**	Year 6 **Light**	Year 6 **Electricity**	Year 6 **RSE**
• 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.	• identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans.	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics	• understand that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram.	**JIGSAW scheme**
• How are local animals/insects different from those in other locations/countries • Explore advantages and disadvantages of adaptations e.g. long fur	• How does your heart rate change for different activities? • How would different types of stomach juices affect break down of food? • Is lung capacity linked to height, age, fitness?	• Which groups would you put organisms from the local environment?	• What happens to the size of a shadow when you move the object nearer the light? • How can we see round corners? – link to periscopes • Which materials are the best for reflecting light? • What colour of writing can be seen best in the dark? • How many reflections can you create using mirrors? • Which light makes the best shadows?	• Does adding another battery make any difference? • Does the thickness of the wire affect the brightness of the bulb? • Does the length of wire affect the brightness of the bulb?	

Key Skills

- Identify an appropriate form of enquiry (fair testing, observation, survey, research, problem solving, classification) to answer a question.
- Work in a team to plan and carry out a science enquiry.
- Identify the equipment required to carry out an investigation.
- Identify what observations to make and how to make them using standard units where relevant.
- Recognise and control variables where necessary.
- Take accurate repeat readings of results using scientific equipment.
- Record and present data and results in a range of appropriate graphs; including bar graphs, line graphs and scatter graphs.
- Record observations using labelled scientific diagrams.
- Create a classification key using observed features.
- Use test results to make predictions that can be investigated in further comparative and fair tests.
- Report conclusions in oral and written forms.
- Identify causal relationships from results and explain what they mean.
- Comment upon the trustworthiness of results and how their accuracy could be improved.
- Identify scientific evidence that use been used to support or refute ideas or arguments.
- Use appropriate scientific language
- Suggest improvements to my work and give reasons
- 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
- 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
- Identify scientific evidence that has been used to support or refute ideas or arguments.

Appendix

National Curriculum

Year group	NC Science
Year 1 programme of study	**Plants** **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 **Animals, including humans** **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, 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 **Everyday materials** **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 **Seasonal changes** Pupils should be taught to: • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies
Year 2 science **Year 2 programme of study**	Living things and their habitats 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 their habitats, including microhabitats • 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 Plants 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 Animals, including humans Pupils should be taught to: • 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 Uses of everyday materials

	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

Year 3 programme of study	Working scientifically **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. Plants Pupils should be taught to: • 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 Animals, including humans Pupils should be taught to: • 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 Rocks Pupils should be taught to: 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 Light Pupils should be taught to: • 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

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	Forces and magnets • compare how things move on different surfaces • notice that some forces need contact between 2 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 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing
Year 4	Living things and their habitats • Pupils should be taught to: • 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 Animals, including humans Pupils should be taught to: • 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 States of matter Pupils should be taught to: • 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 Sound Pupils should be taught to: • 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 Electricity Pupils should be taught to: • 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
Year 5	Living things and their habitats Pupils should be taught to: • 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 Animals, including humans Pupils should be taught to: • describe the changes as humans develop to old age

	Properties and changes of materials 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 • 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 changes associated with burning and the action of acid on bicarbonate of soda Earth and space Pupils should be taught to: • 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 Forces 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 • 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
Year 6	Living things and their habitats 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 micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics Animals including humans 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 • 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 Evolution and inheritance 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 Light 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 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

	Electricity 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 loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram Working scientifically 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 a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments