Newfield Primary School

Year 1 Science Curriculum

Year 1 – Science Seasonal Changes		
Notes and Guidance (non-statutory): Pupils should observe and talk about changes in the weather and the seasons. Note: pupils should be warned that it is not safe to look directly at the sun, even when wearing dark glasses. Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change.	**Working Scientifically:** observing closely, using simple equipment	**Key Vocabulary:** autumn, winter, spring, summer, season, temperature, wind, hail, snow, sun, weather, weather forecast, wind direction, change, fall, thermometer, storm, fog and rain fall.
Prior Learning: **Understanding the world (Reception)** • Understand the effect of changing seasons on the natural world around them.	**Planned Learning:** **Seasonal Changes** • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	**Future/Depth of Learning:** **Seasonal Changes** **No future learning.**

Year 1 – Science Animals, including Humans		
Notes and Guidance (non-statutory): Pupils should have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes.	**Working Scientifically:** Gathering and recording data to help in answering questions.	**Key Vocabulary:** Material, wood, plastic, glass, metal, water, rock, properties, hard, soft, stretch, stiff, shiny, dull, rough, smooth, bendy, waterproof, absorbent, brick, paper, fabrics, elastic and foil.
Prior Learning: **Understanding the world (Nursery)** • Use all their senses in hands-on exploration of natural materials. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	**Planned Learning:** **Animals, including Humans** • Identify, name, draw and label the basic parts of the human body • Say which part of the body is associated with each sense.	**Future/Depth of Learning:** **Animals, including Humans (Year 2)** • 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.

Year 1 – Science Everyday Materials		
Notes and Guidance (non-statutory): Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. Pupils should explore and experiment with a wide variety of materials, not only those listed in the programme of study, but including for example: brick, paper, fabrics, elastic, foil.	**Working Scientifically:** Using their observations and ideas to suggest answers to questions.	**Key Vocabulary:** Material, wood, plastic, glass, metal, water, rock, brick, paper, fabrics, elastic, foil, natural and man-made.
Prior Learning: **Understanding the world (Nursery)** • Explore collections of materials with similar and/or different properties.	**Planned Learning:** **Everyday Materials** • 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.	**Future/Depth of Learning:** **Everyday Materials (Year 2)** • 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 1 – Science Everyday Materials		
Notes and Guidance (non-statutory): Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. Pupils might work scientifically by: performing simple tests to explore questions, for example: 'What is the best material for an umbrella? … for lining a dog basket? … for curtains? … for a bookshelf? … for a gymnast's leotard?'	**Working Scientifically:** Performing simple tests	**Key Vocabulary:** Material, wood, plastic, glass, metal, water, rock, properties, hard, soft, stretch, stiff, shiny, dull, rough, smooth, bendy, waterproof, absorbent, brick, paper, fabrics and elastic.
Prior Learning: **Understanding the world (Nursery)** • Explore collections of materials with similar and/or different properties.	**Planned Learning:** **Everyday Materials** • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties.	**Future/Depth of Learning:** **Everyday Materials (Year 2)** • 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.

<table>
<tr><th colspan="3">Year 1 – Science
Plants</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem). Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees.</td>
<td>Working Scientifically:
identifying and classifying</td>
<td>Key Vocabulary:
Common wild plants, garden plants, tree, deciduous, evergreen, trunk, branches, leaf, plant, bud, flowers, blossom, petals, root, stem, fruit, vegetables, bulb and seed.</td>
</tr>
<tr>
<td>Prior Learning:

Understanding the world (Nursery)
• Plant seeds and care for growing plants.
• Understand the key features of the life cycle of a plant and an animal.</td>
<td>Planned Learning:

Plants
• Identify and name a variety of common wild and garden plants.
• Identify and describe deciduous and evergreen trees.
• Identify and describe the basic structure of a variety of common flowering plants, including trees.</td>
<td>Future/Depth of Learning:

Animals, including Humans (Year 2)
• 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.</td>
</tr>
</table>

Year 1 – Science Animals, including Humans		
Notes and Guidance (non-statutory): Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat. They should understand how to take care of animals taken from their local environment and the need to return them safely after study. Pupils should become familiar with the common names of some fish, amphibians, reptiles, birds and mammals, including those that are kept as pets.	**Working Scientifically:** Asking simple questions and recognising that they can be answered in different ways.	**Key Vocabulary:** Common, animals, fish, amphibians, reptiles, birds, mammals, pets, carnivores, meat, cat, dog, lion, tiger, fox, shark, killer, whale, eagle, hawk, snake, herbivores, plants and cow.
Prior Learning: **Understanding the world (Nursery)** • Use all their senses in hands-on exploration of natural materials. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	**Planned Learning:** **Animals, including Humans** • 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.	**Future/Depth of Learning:** **Animals, including Humans (Year 2)** • 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.

Year 1 – Science Animals, including Humans		
Notes and Guidance (non-statutory): Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat. They should understand how to take care of animals taken from their local environment and the need to return them safely after study. Pupils should become familiar with the common names of some fish, amphibians, reptiles, birds and mammals, including those that are kept as pets.	**Working Scientifically:** Asking simple questions and recognising that they can be answered in different ways.	**Key Vocabulary:** Common, animals, fish, amphibians, reptiles, birds, mammals, pets, carnivores, meat, cat, dog, lion, tiger, fox, shark, killer, whale, eagle, hawk, snake, herbivores, plants and cow.
Prior Learning: **Understanding the world (Nursery)** • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	**Planned Learning:** **Animals, including Humans** • Describe the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). • Compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	**Future/Depth of Learning:** **Animals, including Humans (Year 2)** • 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.

Newfield Primary School

Year 2 Science Curriculum

Year 2 – Science Uses of Everyday Materials		
Notes and Guidance (non-statutory): Pupils should identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing. They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials.	**Working Scientifically:** Performing simple tests.	**Key Vocabulary:** Material, metal, plastic, wood, paper, glass, clay, rock, fabric, sand, hard, soft, rough, smooth, shiny, dull, bendy, waterproof, strong, weak, group, object, sort, stretching, squashing, bending, twisting, stretching, lets light through and transparent.
Prior Learning: **Uses of Everyday Materials (year 1)** • 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.	**Planned Learning:** **Uses of Everyday Materials** • 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.	**Future/Depth of Learning:** **No future learning.**

<table>
<tr><th colspan="3">Year 2 – Science
Animals, including Humans</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
They should be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs.
The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults can include reference to baby, toddler, child, teenager, adult.</td>
<td>Working Scientifically:

Asking simple questions and recognising that they can be answered in different ways.</td>
<td>Key Vocabulary:
Offspring, survival, air, food, water, exercise, hygiene, nutrition, grow, egg, chick, chicken, egg, caterpillar, pupa, butterfly, spawn, tadpole, frog, lamb, sheep, baby, toddler, child, teenager and adult.</td>
</tr>
<tr>
<td>Prior Learning:

Animals, including Humans (Year 1)
• 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</td>
<td>Planned Learning:

Animals, including Humans

• 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).</td>
<td>Future/Depth of Learning:

Animals, including Humans (Year 3)

• 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.</td>
</tr>
</table>

<table>
<tr><th colspan="3">Year 2 – Science
Animals, including Humans</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
Pupils should be introduced to the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans. Pupils might work scientifically by: asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.

I</td>
<td>Working Scientifically:
Gathering and recording data to help in answering questions.</td>
<td>Key Vocabulary:
Grow, nutrition, survival, water, food, air, exercise and hygiene.</td>
</tr>
<tr>
<td>Prior Learning:

Animals, including Humans (Year 1)
• 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</td>
<td>Planned Learning:

Animals, including Humans

• Describe the importance for humans of exercise.

• Describe the importance for humans to eat the right amounts of different types of food.

• Describe the importance for humans of maintaining good hygiene.</td>
<td>Future/Depth of Learning:

Animals, including Humans (Year 3)
• 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.</td>
</tr>
</table>

Year 2 – Science Plants		
Notes and Guidance (non-statutory): Pupils should use the local environment throughout the year to observe how plants grow. Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as the processes of reproduction and growth in plants.	**Working Scientifically:** Observing closely, using simple equipment.	**Key Vocabulary:** Water, light, suitable, temperature, grow, healthy, germination and reproduction.
Prior Learning: **Plants (Year 1)** • 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.	**Planned Learning:** **Plants** • 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.	**Future/Depth of Learning:** **Plants (Year 3)** • 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.

Year 2 – Science Living things and their Habitats		
Notes and Guidance (non-statutory): Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. They should raise and answer questions that help them to become familiar with the life processes that are common to all living things. rainforest.	**Working Scientifically:** Identifying and classifying	**Key Vocabulary:** Living, dead, never alive, food, food chain, sun-grass-cow-human, alive, healthy
Prior Learning: **Understanding the World (Reception)** • Explore the natural world around them.	**Planned Learning:** **Living things and their Habitats** • Explore and compare the differences between things that are living, dead, and things that have never been alive. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain. • Identify and name different sources of food.	**Future/Depth of Learning:** **Living things and their Habitats (Year 4)** • 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.

Year 2 – Science Living things and their Habitats		
Notes and Guidance (non-statutory): They should raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals. Pupils should compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.	**Working Scientifically:** Using their observations and ideas to suggest answers to questions.	**Key Vocabulary:** Living, dead, never alive, food, food chain, sun-grass-cow-human, alive, healthy Habitats, micro-habitats, logs, leaf, litter, stony, path, under bushes, shelter, seashore, woodland, ocean, rainforest, conditions, hot/ warm/ cold dry/ damp/ wet bright/ shade/ dark.
Prior Learning: **Understanding the World (Reception)** • Explore the natural world around them.	**Planned Learning:** **Living things and their Habitats** • Identify that most living things live in habitats to which they are suited. • 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.	**Future/Depth of Learning:** **Living things and their Habitats (Year 4)** • 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.

Newfield Primary School

Year 3 Science Curriculum

Year 3 – Science Animals, including Humans		
Notes and Guidance (non-statutory): Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions. Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons.	**Working Scientifically:** Setting up simple practical enquiries, comparative and fair tests.	**Key Vocabulary:** Nutrition, vitamins, minerals, fat, protein, carbohydrates, fibre, water, bone skeletons, spine, vertebrate, support, protection, skull, brain, ribs, heart, lungs, joints, muscles, move, movement, pull, contract, relax and diet.
Prior Learning: **Animals, including Humans (Year 2)** • 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.	**Planned Learning:** **Animals, including Humans** • Identify that animals, including humans, need the right types and amount of nutrition. • Identify that animals 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.	**Future/Depth of Learning:** **Animals, including Humans (Year 4)** • 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.

Year 3 – Science Light		
Notes and Guidance (non-statutory): Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.	**Working Scientifically:** Asking relevant questions and using different types of scientific enquiries to answer them.	**Key Vocabulary:** Light, travels, straight, reflect, reflection, light, source, object, shadows, mirrors, periscope, rainbow and filters.
Prior Learning: **No Prior Learning.**	**Planned Learning:** **Light** • 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 changes.	**Future/Depth of Learning:** **Light (Year 6)** • 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.

Year 3 – Science Rocks		
Notes and Guidance (non-statutory): Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment. Pupils might work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them.	**Working Scientifically:** using straightforward scientific evidence to answer questions or to support their findings.	**Key Vocabulary:** Rock, slate, granite, sandstone, chalk, soil, clay, sand, limestone, quartz, marble, stone, pebble, texture, absorbent, characteristic, surface, igneous, sedimentary and metaphoric.
Prior Learning: **Rocks** **No prior Learning.**	**Planned Learning:** **Rocks** • 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.	**Future/Depth of Learning:** **Rocks** **No future learning.** **Evolution (Year 6)** • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.

<table>
<tr><th colspan="3">Year 3 – Science
Plants</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.
Note: pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.</td>
<td>Working Scientifically:

Identifying differences, similarities or changes related to simple scientific ideas and processes.</td>
<td>Key Vocabulary:
structure – flowering plants, roots, stem/ trunk, leaves, flowers

function – nutrition, support, reproduction, makes own food

requirements for life and growth – air, light, water, nutrients from the soil, room to grow, fertiliser

life cycle - flowers pollination, seed formation, seed dispersal</td>
</tr>
<tr>
<td>Prior Learning:

Plants (Year 2)

• 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.</td>
<td>Planned Learning:

Plants

• 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.</td>
<td>Future/Depth of Learning:

Plants

No further learning in primary school.</td>
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<table>
<tr><th colspan="3">Year 3 – Science
Forces and magnets</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
Pupils should observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe).</td>
<td>Working Scientifically:

Identifying differences, similarities or changes related to simple scientific ideas and processes.</td>
<td>Key Vocabulary:

Force, push, pull, open, surface, magnet, magnetic, attract, repel, poles, north, south, metal, iron and steel.</td>
</tr>
<tr>
<td>Prior Learning:

Understanding the World (Nursery)

• Explore and talk about different forces they can feel.</td>
<td>Planned Learning:

Forces and magnets

• Compare how things move on different surfaces
• Notice that some forces need contact between two objects, but magnetic forces can act at a distance
• 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</td>
<td>Future/Depth of Learning:

Forces and magnets

Forces (Year 5)
• 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.</td>
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</table>

Year 3 – Science Forces and magnets		
Notes and Guidance (non-statutory): Pupils should observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe).	**Working Scientifically:** Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	**Key Vocabulary:** Force, push, pull, open, surface, magnet, magnetic, attract, repel, poles, north, south, metal, iron and steel.
Prior Learning: **Understanding the World (Nursery)** • Explore and talk about different forces they can feel.	**Planned Learning:** **Forces and magnets** • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. • Observe how magnets attract or repel each other and attract some materials and not others.	**Future/Depth of Learning:** **Forces and magnets** **Forces (Year 5)** • 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

Newfield Primary School

Year 4 Science Curriculum

Year 4 – Science States of Matter		
Notes and Guidance (non-statutory): Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.	**Working Scientifically:** Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	**Key Vocabulary:** Solid, liquid, gas, air, oxygen, powder, grain/ granular, crystals, ice, water, steam, water vapour, heated/ heating, cooled/ cooling, temperature, degrees, Celsius, melt, freeze, solidify, melting point, molten and boil.
Prior Learning: **States of Matter** **No previous learning.**	**Planned Learning:** **States of 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. • Measure or research the temperature at which materials change state when heated or cooled in degrees Celsius (°C). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature (make specific links to the water cycle as a whole and then hone in on evaporation and condensation). The water cycle to be used as a way to explain evaporation and condensation processes.	**Future/Depth of Learning:** **States of Matter** **Properties and material changes (year 5)** • 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. • 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.

<table>
<tr><th colspan="3">Year 4 – Science
Sound</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world. Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound.</td>
<td>Working Scientifically:

Setting up simple practical enquiries, comparative and fair tests.</td>
<td>Key Vocabulary:
Vibrate, vibrations, air, travel, materials, high, low, loud, soft, ear, fainter, louder, distance, travel and sound waves.</td>
</tr>
<tr>
<td>Prior Learning:

Sound

Understanding the World (Reception)
• Describe what they see, hear and feel whilst outside.</td>
<td>Planned Learning:

Sound
• Identify how sounds are made, associating some of them with something vibrating.

• Recognise that vibrations from sounds travel through a medium to the ear.

• Recognise that sounds get fainter as the distance from the sound source increases.</td>
<td>Future/Depth of Learning:

Sound

No future learning.</td>
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</table>

Year 4 – Science Sound		
Notes and Guidance (non-statutory): Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world. Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound.	**Working Scientifically:** Setting up simple practical enquiries, comparative and fair tests.	**Key Vocabulary:** Vibrate, vibrations, air, travel, materials, high, low, loud, soft, ear, fainter, louder, distance, travel and sound waves.
Prior Learning: **Understanding the World (Reception)** • Describe what they see, hear and feel whilst outside.	**Planned Learning:** **Sound** • 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.	**Future/Depth of Learning:** **Sound** **No future learning.**

<table>
<tr><th colspan="3">Year 4 – Science
Animals, including humans</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
Pupils should be introduced to the main body parts associated with the digestive system, for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine, and explore questions that help them to understand their special functions.</td>
<td>Working Scientifically:

Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</td>
<td>Key Vocabulary:
tongue-mixes, moistens, saliva

teeth: incisors- cutting, slicing

canines- ripping, tearing

molars-chewing, grinding

human digestive system, mouth, oesophagus, transports, stomach, acid, enzymes, small intestine, large intestine, carnivore, herbivore, omnivore, brush, floss, food chain, producers, prey and predators.</td>
</tr>
<tr>
<td>Prior Learning:

Animals, including humans (year 3)

• 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.</td>
<td>Planned Learning:

Animals, including humans
• 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.</td>
<td>Future/Depth of Learning:

Animals, including humans (year 5)

• Describe the changes as humans develop to old age.</td>
</tr>
</table>

<table>
<tr><th colspan="3">Year 4 – Science
Electricity</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6.</td>
<td>Working Scientifically:
Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</td>
<td>Key Vocabulary:
Appliances, electricity, electrical circuit, cell, wire, crocodile clip, bulb, buzzer, danger, electrical safety sign, insulators, wood, rubber, plastic, glass, conductors, metal, switch, open, closed, components, plug, motor and mains.</td>
</tr>
<tr>
<td>Prior Learning:

No prior learning.</td>
<td>Planned Learning:

Electricity
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.</td>
<td>Future/Depth of Learning:

Electricity (Year 6)
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.</td>
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</table>

<table>
<tr><th colspan="3">Year 4 – Science
Living things and their habitats</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals, flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups, for example: fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.</td>
<td>Working Scientifically:

Asking relevant questions and using different types of scientific enquiries to answer them.</td>
<td>Key Vocabulary:

Environment, flowering, non-flowering, plants, animals, vertebrate, danger, invertebrates- snails, slugs, worms, spiders, insects’ vertebrates- fish, amphibians, reptiles, birds, mammals plants – flowering plants, non-flowering, plants, population, development, litter and deforestation.</td>
</tr>
<tr>
<td>Prior Learning:

Living things and their habitats (Year 2)
• Explore and compare the differences between things that are living, dead, and things that have never been alive.
• Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain.
• Identify and name different sources of food.
• Identify that most living things live in habitats to which they are suited.
• 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</td>
<td>Planned Learning:

Living things and their habitats
• 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.</td>
<td>Future/Depth of Learning:

Living things and their habitats

• 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.</td>
</tr>
</table>

Newfield Primary School

Year 5 Science Curriculum

Year 5 – Science Earth and Space		
Notes and Guidance (non-statutory): Pupils should be introduced to a model of the Sun and Earth that enables them to explain day and night. Pupils should learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). They should understand that a moon is a celestial body that orbits a planet.	**Working Scientifically:** Identifying scientific evidence that has been used to support or refute ideas or arguments.	**Key Vocabulary:** Earth, planets, Sun, solar system, Moon, celestial body, sphere/ spherical, rotate/ rotation, spin, night and day, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, 'dwarf' planet, orbit, revolve, , shadow clocks, sundials and astronomical clocks.
Prior Learning: **No prior learning.**	**Planned Learning:** **Earth and Space** • 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.	**Future/Depth of Learning:** **No future learning.**

Year 5 – Science Forces		
Notes and Guidance (non-statutory): Pupils should explore falling objects and raise questions about the effects of air resistance. They should experience forces that make things begin to move, get faster or slow down. Pupils should explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel. Pupils should explore the effects of levers, pulleys and simple machines on movement.	**Working Scientifically:** Using test results to make predictions to set up further comparative and fair tests.	**Key Vocabulary:** Air resistance, force, drop, friction, gear, gravity, lever, mechanism, pendulum, pull, pulley, push, slide, speed, streamlined and water resistance.
Prior Learning: **Forces (Year 3)** • 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.	**Planned Learning:** **Forces** • 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.	**Future/Depth of Learning:** **Forces** **No future learning.**

Year 5 – Science Living things and their habitats		
Notes and Guidance (non-statutory): Pupils should study and raise questions about their local environment throughout the year. They should observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment. Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.	**Working Scientifically:** Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	**Key Vocabulary:** Life process of reproduction: plants, animals, vegetable, garden, flower, border, reproduction, plants- sexual, asexual animals- sexual life cycles- mammal, amphibian, insect, bird, lifecycles around the world, rainforest, oceans, desert, prehistoric, similarities, differences, germination, pollination, stamen and stigma.
Prior Learning: **Living things and their habitats (Year 4)** • 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.	**Planned Learning:** **Living things and their habitats** • 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.	**Future/Depth of Learning:** **Living things and their habitats (Year 6)** • 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

<table>
<tr><th colspan="3">Year 5 – Science
Properties and changes of materials</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
They should explore reversible changes, including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes. Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. They should find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.</td>
<td>Working Scientifically:

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.</td>
<td>Key Vocabulary:
Properties, hardness, solubility, transparency, conductive, response to magnets, dissolve, liquid, solution, solute, separate, separating solids, liquids, gases, filtering, sieving, evaporating, mixing, evaporation, filtering, sieving, melting, conductivity, insulation, chemical, opaque, reversible, irreversible, translucent and condensing.</td>
</tr>
<tr>
<td>Prior Learning:

Properties and changes of materials

States of matter (year 4)

• 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.</td>
<td>Planned Learning:

Properties and changes of materials
• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.

• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.

• Demonstrate that dissolving, mixing and changes of state are reversible changes.</td>
<td>Future/Depth of Learning:

Properties and changes of materials

No further learning in primary school.</td>
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<td>Working Scientifically:

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.</td>
<td>Key Vocabulary:
Properties, hardness, solubility, transparency, conductive, response to magnets, dissolve, liquid, solution, solute, separate, separating solids, liquids, gases, filtering, sieving, evaporating, mixing, evaporation, filtering, sieving, melting, conductivity, insulation, chemical, opaque, reversible, irreversible, translucent and condensing.</td>
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<tr>
<td>Prior Learning:

Properties and changes of materials
States of matter (year 4)

• 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.</td>
<td>Planned Learning:

Properties and changes of materials

• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
• 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.
• 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.</td>
<td>Future/Depth of Learning:

Properties and changes of materials

No further learning in primary school.</td>
</tr>
</table>

Year 5 – Science Animals, including Humans		
Notes and Guidance (non-statutory): Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty. Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.	**Working Scientifically:** Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	**Key Vocabulary:** Human, development, baby, toddler, child, teenager, adult, puberty, gestation, length, mass, grows, grow and growing.
Prior Learning: **Animals, including Humans (year 4)** • 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.	**Planned Learning:** **Animals, including Humans** • Describe the changes as humans develop to old age.	**Future/Depth of Learning:** **Animals, including Humans (year 6)** • 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.

Newfield Primary School

Year 6 Science Curriculum

Year 6 – Science Evolution		
Notes and Guidance (non-statutory): Building on what they learned about fossils in the topic on rocks in year 3, pupils should find out more about how living things on earth have changed over time. They should appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox. Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.	**Working Scientifically:** Identifying scientific evidence that has been used to support or refute ideas or arguments.	**Key Vocabulary:** Adaptation, ancestry, characteristic, Charles Darwin, dinosaur, environment, evolution, experiment, extinct, finch, fossil, Galápagos Islands, gene, generation, genetics, Gregor Mendel, HMS Beagle, inheritance, investigation, Mary Anning, naturalist, natural selection, natural world, observation, offspring, origin, palaeontology, scientist, skeleton, species, specimen, theory, variation and voyage.
Prior Learning: **No prior learning specifically on Evolution.** **Fossil (Year 3)** • Describe in simple terms how fossils are formed when things that have lived are trapped within rock	**Planned Learning:** **Evolution** • Recognise that living things have changed over time. • Recognise that fossils provide information about living things that inhabited the Earth millions of years ago. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	**Future/Depth of Learning:** **No future learning in Primary.** **Key Stage 3** • The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. • Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.

Year 6 – Science Inheritance		
Notes and Guidance (non-statutory): They should be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, Labradors are crossed with poodles. Note: at this stage, pupils are not expected to understand how genes and chromosomes work.	**Working Scientifically:** 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.	**Key Vocabulary:** Biometrics, characteristic, crime scene, DNA, fingerprint, evidence, experience family, gene, hobby, human behaviour, identical, identification, identity, inherit, nature vs nurture, debate, opinion, belief, parent, personality, physical appearance, psychologist and scientist.
Prior Learning: **Understanding the World** • Talk about members of their immediate family and community.	**Planned Learning:** **Inheritance** • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents	**Future/Depth of Learning:** **Inheritance** **No future learning in Primary school.** **Year 7** • Heredity as the process by which genetic information is transmitted from one generation to the next. • A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. • The importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.

Year 6 – Science Light		
Notes and Guidance (non-statutory): Pupils should build on the work on light in year 3, exploring the way that light behaves, including light sources, reflection and shadows. They should talk about what happens and make predictions.	**Working Scientifically:** Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	**Key Vocabulary:** Light, travels, straight, reflect, reflection, light, source, object, shadows, mirrors, periscope, rainbow and filters.
Prior Learning: **Light (Year 3)** • 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 changes.	**Planned Learning:** **Light** • 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.	**Future/Depth of Learning:** **Light (Year 7)** • The similarities and differences between light waves and waves in matter. • Light waves travelling through a vacuum; speed of light. • The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface. • Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye. • Light transferring energy from source to absorber, leading to chemical and electrical effects; photosensitive material in the retina and in cameras. • Colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.

Year 6 – Science Electricity		
Notes and Guidance (non-statutory): Building on their work in year 4, pupils should construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors. They should learn how to represent a simple circuit in a diagram using recognised symbols. Note: pupils are expected to learn only about series circuits, not parallel circuits. Pupils should be taught to take the necessary precautions for working safely with electricity.	**Working Scientifically:** Using test results to make predictions to set up further comparative and fair tests.	**Key Vocabulary:** Appliances, electrical, circuit, complete, circuit, circuit, diagram, circuit symbol, components, cell, battery, positive/ negative, terminal, connection, loose connection, short, circuit wire, crocodile clip, bulb, brightness, switch, buzzer, volume, motor, conductor, insulator, voltage, current, resistance, danger and series circuit.
Prior Learning: **Electricity (Year 4)** • 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.	**Planned Learning:** **Electricity** • 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.	**Future/Depth of Learning:** **Electricity (Year 7)** • Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge. • Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current. • Differences in resistance between conducting and insulating components (quantitative).

<table>
<tr><th colspan="3">Year 6 – Science
Animals, including humans</th></tr>
<tr>
<td>Notes and Guidance (non-statutory):
Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function.
Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body.</td>
<td>Working Scientifically:

Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</td>
<td>Key Vocabulary:

circulatory system, heart, blood, blood vessels, pumps, oxygen, carbon dioxide, lungs, nutrients, water, diet, exercise, drugs and lifestyle.</td>
</tr>
<tr>
<td>Prior Learning:

Animals, including humans (Year 5)

• Describe the changes as humans develop to old age.</td>
<td>Planned Learning:

Animals, including humans
• 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.</td>
<td>Future/Depth of Learning:

Animals, including humans (Year 7)

• The content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed.
• Calculations of energy requirements in a healthy daily diet.
• The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases.
• The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts).
• The importance of bacteria in the human digestive system.
• The effects of recreational drugs (including substance misuse) on behaviour, health and life processes.</td>
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</table>

Year 6 – Science Living things and their habitats		
Notes and Guidance (non-statutory): Pupils should build on their learning about grouping living things in year 4 by looking at the classification system in more detail. They should be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible, they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals).	**Working Scientifically:** Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	**Key Vocabulary:** Organism, micro-organism, fungus, mushrooms, classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates and invertebrates.
Prior Learning: **Living things and their habitats (Year 4)** • 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.	**Planned Learning:** **Living things and their habitats** • 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.	**Future/Depth of Learning:** **Living things and their habitats** **(Year 7)** • The similarities and differences between plant and animal cells.