Yorke Mead Primary School
Science Curriculum

Italics are suggested ideas to help meet the Learning Intention

Bold are statutory requirements

SMCS

Year 1 **Key Theme :** Plants	**Key Vocabulary: fruit, bark, branches, trunk, stem, leaves, leaf, seed, flower, petal, roots, bulb, growth, water, sunlight, wild, environment, local, plant**	
Previous Learning (EYFS) To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Children know about similarities and differences in relation to places, objects, materials and living things. - Seasonal nature walks	**Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees** • name some common plants • name some plants that live in the garden • name some plants that live in the wild - *use the field… what can you see? Buttercups, daisies, weeds, what can you see growing around the perimeter of the field? (bushes, tress… some of the bushes contain berries such as the holly bush and the elder trees, which the birds have eaten and then excreted and caused further trees to grow)* • name some trees in the local environment. *In our grounds we have: oaks, hawthorn, ash, silver birch, Laurel, hazel, Horse chestnut. Children could have a key to try and find these trees – working as a class like a scavenger hunt.* • recognise that different plants live in the local environment • use simple identification guides to name plants in the local environment	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). • compare and contrast different plants • sequence pictures of how plants changes over time • describe how deciduous trees changes throughout the year • explain why some plants are only seen at certain times of the year

Yorke Mead Primary School
Science Curriculum

They make observations of animals and plants and explain why some things occur, and talk about changes.	**Identify and describe the basic structure of a variety of common flowering plants, including trees.** *Make sketches of the trees in the school grounds, label with scientific language (word banks) e.g. roots, trunk, leaves, branches, stem, blossom, fruit, bulb)* • know that plants produce seeds: *learn that 'if it has seeds, it's a fruit'. Children to sort a range of fruits and vegetables but cutting them in half e.g. cucumber, tomato, apple, pear, pepper etc.*	
They talk about the features of their own immediate environment and how environments might vary from one another.	Use the local environment throughout the year to explore and answer questions about plants growing in their habitat (walk the perimeter of the field including forest school: holly bushes (changes in leaves from the bottom of the plant to the top), black ash, oaks,	Observe the growth of flowers and vegetables that they have planted.
Working Scientifically: 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. Pupils might keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants. Plant, grow and observe runner beans and broad beans - paper made house with a plastic bag attached with the bean inside it. The children then fill in a diary to describe ours progress.		

Year 1 **Key Theme :** Animals including humans	**Key Vocabulary**: **human, animal, plant, meat, reptile, amphibian, fish, bird, mammal, herbivore, carnivore, omnivore. Senses: sight, sound, touch, smell, taste**	
Previous Learning (EYFS) To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Children know about similarities and differences in relation to places, objects, materials and living things. - Animal habitats - Animal patterns and prints - Seasonal nature walks	**Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals** Pupils should become familiar with the common names of some fish, amphibians, reptiles, birds and mammals, including those that are kept as pets.	Describe differences between the different animal groups (e.g. birds have feathers but mammals have fur) Identify animals which are more likely to be seen in different seasons

Yorke Mead Primary School
Science Curriculum

- Self care / hygiene - Sports day: bodies	*Visit from a pet.	Explain why some animals are only seen at night
They make observations of animals and plants and explain why some things occur, and talk about changes. - Animal patterns and prints - Seasonal nature walks - Woodland animals - Life cycles - Minibeasts	**Identify and name a variety of common animals that are carnivores, herbivores and omnivores** Minibeast hunt in the school grounds identify the food of some common animals	group animals that belong to: carnivores, herbivores and omnivores Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat. (see fox trails around the perimeter of the field, badger sets on the edge of forest school). They should understand how to take care of animals taken from their local environment and the need to return them safely after study. *
	Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	Pupils identify ways in which an animal is suited to its environment (for example, a fish having fins to help it swim).
	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. *senses afternoon (linked to mindful tasting) •compare differences in texture, sounds and smells •name and locate the basic parts of the human body •draw and label a simple body outline	Pupils can name the five senses and the part of the body they are related to. They can explain how they use each of their senses and how they keep them safe.
Working Scientifically: Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.		

Yorke Mead Primary School
Science Curriculum

Year 1 **Key Theme :** everyday materials	**Key Vocabulary: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent.**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Children know about similarities and differences in relation to places, **objects**, **materials** and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.	**Distinguish between an object and the material from which it is made** 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. •Identify some naturally occurring materials: wood, rock, water •Identify some man-made materials: glass, metal, plastic	Pupils describe things that are similar and different between materials. Describe and compare the properties of everyday materials.
Looks closely at similarities, differences, patterns and change. Adults will have: helped children to notice and discuss patterns around them, e.g. rubbings from grates, covers, or bricks.	**Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock** •identify some properties of materials (e.g. see through, waterproof, absorbent)	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. Name materials which have lots of different uses (e.g. paper- wrapping paper, tissue paper, writing paper, birthday card) Names objects that are sometimes made from different materials (e.g.: spoons- plastic, wooden, metal)

Yorke Mead Primary School
Science Curriculum

	Describe the simple physical properties of a variety of everyday materials	Pupils explain what happens to certain materials when they are heated or cooled, for example, bread, ice, chocolate, jelly, heated chocolate.
	Compare and group together a variety of everyday materials on the basis of their simple physical properties (both visible and non-visible)	make predictions about which materials will float and sink Describe objects that are made from lots of different materials Explain why people started using plastic bags rather than paper bags
Working Scientifically: 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?'		

Year 1 **Key Theme :** Seasonal Changes THIS WILL BE TAUGHT OVER TWO SESSIONS ONCE EACH TERM.	**Key Vocabulary:** **Seasons: autumn, winter, spring, summer; day, night, day length** **Weather: rain gauge, temperature, weather vane, rainfall** **Investigating: observe, measure, record, changes**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Looks closely at similarities, differences, patterns and change.	**Observe changes across the 4 seasons** Pupils should observe and talk about changes in the weather and the seasons Use descriptive words, photos and pictures to record changes: *children to stand in front of the tree by the forest school sheds. Take a photo in autumn, winter, spring and summer: make comparisons.* •*identify what to observe*	Explain why animals are easier to spot at different times of year (e.g. migrating birds, hibernating animals)

	•*collect evidence of changes (e.g. leaves, seeds, flowers)*	
Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.	**Observe and describe weather associated with the seasons and how day length varies** Pupils should be warned that it is not safe to look directly at the sun, even when wearing dark glasses.	Use secondary data to describe weather in another setting
Working Scientifically: 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.		

Year 2 **Key Theme :** Plants - Red onions (bulbs) Sunflowers (seeds)	**Key Vocabulary:** **Roots, stem, seed, bulb, leaf, flower, grain, fruit, germinate, life cycle, life process, healthy** **Investigate: compare, observe, predict, diagram, measure,**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	**Observe and describe how seeds and bulbs grow into mature plants** **E**xplore how plants from seeds and bulbs grow Describe what happens to bulbs during the plant cycle as they grow Describe what happens to a seed as it grows and develops Describe what they observe as new plants grow	Explain how to look after a variety of plants Compare the plant cycle for a plant from a seed with that from a bulb Know that a seed and bulb both contain everything a plant needs to grow

Yorke Mead Primary School
Science Curriculum

Identify and describe the basic structure of a variety of common flowering plants, including trees. **Y1 – children grew runner beans and broad beans.**	**Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy** Note: Seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them Suggest how to find out about what plants need in order to grow well Recognise that plants are living and need water, light and warmth to grow Describe differences between plants grown in the light and in the dark	Explain that seeds and bulbs do not need light to germinate and identify how this is different to the needs of a plant
	Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants.	Explain how plants in the desert survive with little water and plants in the rainforest survive with little light
Use the local environment throughout the year to explore and answer questions about plants growing in their habitat	Pupils should use the local environment throughout the year to observe how different plants grow. *Walk the perimeter of the school field, what do you notice about the growth of the grass? Is it all the same colour (no, it has grown in zones) Why are no plants or grass growing under that tree / bush? (limited light). Observe buds growing on the trees during the winter months of January, February e.g. horsechestnut: red buds, Ash: black buds, Oak: fingers of buds, beech: as well as during the spring and summer months. Simialar to Y1, children could stand at the same spot e.g. around a tree and an*	Use evidence and record how different plants grow. Use scientific language to compare places or seasons.

Yorke Mead Primary School
Science Curriculum

	area of growth and compare throughout the 4 seasons.	
Working Scientifically: observe and record, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observe similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy. Seed: sunflower bulb: Red onions as these can be planted in May time		

Year 2 **Key Theme : Animals including humans – Growth and Survival** (Large unit so taught across two half terms)	**Key Vocabulary: mammals, birds, amphibians, reptiles, fish, gills, hatchling, chick, Offspring, Pregnancy, baby, toddler, child, teenager, adult, elderly, Egg, spawn, tadpole; caterpillar, pupa, butterfly; lamb, sheep Hygiene, lungs, exercise Survival: water, food, air**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Y1	**Notice that animals, including humans, have offspring which grow into adults.** They should also 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. describe some differences they observe between babies and toddler Explain that adult animals no longer grow Make comparisons of the differences they observe between babies and toddlers	Use evidence to show that adult animals no longer grow Use evidence to show that children of the same age are not all the same size Use evidence to show that older children are generally taller than younger children

Yorke Mead Primary School
Science Curriculum

Identify and name a variety of common animals that are carnivores, herbivores and omnivores Y1	**Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)**	Explain how to look after a pet describing what it needs to survive
Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) Y1	**Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene** Identify some types of food that make up their diet and name some examples of each Describe some of the types of food that they eat	To create a meal or exercise plan for a human to complete.
Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. *senses afternoon (linked to mindful tasting) **EYFS/Y1**		
Working Scientifically: Pupils might work scientifically by: observing, through video or first-hand observation and measurement, how different animals, including humans, grow; 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.		

Year 2 **Key Theme :** Uses of everyday materials	**Key Vocabulary: Identify, materials, wood, plastic, glass, metal, rock, brick, paper, cardboard,** uses, used**, properties, hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, not bendy, absorbent, non-absorbent, waterproof, not waterproof, transparent, opaque, classify, group, similar**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Distinguish between an object and the material from which it is made	**Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses** Pupils should identify and discuss the uses of different everyday materials so that they become	Explain why plastics cause problems in the oceans Explain the importance of reusing and recycling plastic

Yorke Mead Primary School
Science Curriculum

	familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass).	
Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	**Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching** Describe changes in shapes as a result of the action of pushes, pulls and twists 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.	Explain why some materials change shape when a force acts (i.e. push, pull, twist, stretch) as a result of their properties Explain why one material may be more suitable for a purpose than another by discussing properties Describe how swimsuits have changed over time and how the fabric is now more suitable Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam.
Working Scientifically: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.		

Year 2 **Key Theme :** Living Things and their habitats (Large unit so taught across two half terms)	**Key Vocabulary: Life process, living, non-living, dead, never alive, movement, respiration, sensitivity, growth, reproduction, excretion, nutrition, habitat, conditions, survive, urban, woodland, pond, coast, coastal, minibeast, microhabitat, enquiry, survey, adaptation**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps

Yorke Mead Primary School
Science Curriculum

From EYFS: Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.	**Explore and compare the differences between things that are living, dead, and things that have never been alive** Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. Explain differences between living and non-living things in terms of characteristics such as movement and growth They should raise and answer questions that help them to become familiar with the life processes that are common to all living things.	To give scientific explanations as to why things are living, dead or never alive. To compare characteristics between living, non-living and deas things. To apply these ideas to real life.
	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 Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'microhabitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter).	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. Can give key features that mean the animal or plant is suited to its micro- habitat Can explain in simple terms why an animal or plant is suited to a habitat. For example, the caterpillar cannot live under the soil like a worm as it needs fresh leaves to eat; the seaweed we found on the beach cannot live in our pond because it is not salty.
	Identify and name a variety of plants and animals in their habitats, including microhabitats. They should raise and answer questions about the local environment that help them to identify and	Compare animals found in familiar habitats with unfamiliar habitats compare plants found in familiar habitats with unfamiliar habitats

	study a variety of plants and animals within their habitat - With help, <u>use keys</u> to identify some animals and plants - Recognise that different plants live in the local environment E.G. walk around the school site. Ask what grows at the bottom of tree: why no grass? (Lack of light), some plants are beginning to grow (adaptation – they're happy). Red Dead Nettles (do not sting) have a square, hollow stem – why do you think this is? (a good platform for alternative leaves). - Recognise similarities and differences between plants and animals and differences between plants and animals - Describe the simple features of habitats - Recognise a microhabitat as a small habitat (e.g. leaf litter, woodlice under stones) - Describe some microhabitats	Use different factors to compare a range of habitats (e.g. water, light, temperature)
	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 Construct a simple food chain (e.g. grass, cow, human). Around the perimeter of the field there are many different types of bushes and trees. E.g. elderberries and holly. Why do you think they are here? Link to food chain: birds eating berries → excreting → plants grow → elderberries / holly.	To make a food chain using living things from the field that they have seen.

Yorke Mead Primary School
Science Curriculum

	Suggest reasons why different plants and animals are found in the different environments Observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals.	
Working Scientifically: sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions like: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. They could construct a simple food chain that includes humans (eg, grass, cow, human). They could describe the conditions in different habitats and microhabitats (under log, on stony path, under bushes); and find out how the conditions affect the number and type(s) of plants and animals that live there		

Year 3 **Key Theme :** Plants – investigating plants	**Key Vocabulary: flower, leaf, seed, stem, roots, petal, pollen, life cycle, dispersal, pollination, fertilisation, germination, ovary, ovule, sepal, stamen, anther, filament, stigma, style**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Observe and describe how seeds and bulbs grow into mature plants Y2 **Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy Y2**	**Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.** - 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 <u>focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.</u> - Describe why healthy roots and a healthy stem are needed for plants to grow - Recognise that the leaves of a plant are associated with healthy growth and more specifically nutrition	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 • Explain why healthy roots and a healthy stem are needed for plants to grow • Explain that differences in plant growth are due to the amount of light and/or water

	Visit the school field and in particular to the tree next to the forest school sheds. The trunk has twisted to support the weight of the branches which have grown to one side (like carrying all of your shopping in one hand). There is also an example of this in the Nursery/Reception garden. *Nettles have square stems to gather more nutrients and to have a stronger structure.* *Flowers are colourful to attract insects. What are the 5 colours of flowers? (blue, red, yellow, white and most common: green).* *All flowers are there to reproduce. All seeds come from flowers.* *Using flower heads, pull apart, gently, to reveal the structure including the pollen on the anthers.*	
Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy Note: Seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them **Y1 – Children grew runner beans and broad beans** **Y2 – Children grew red onions from a bulb and a sunflower from a seed**	**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** • know that fertilisers contain minerals • understand that plants absorb minerals from the soil (Teacher Note: plants create their own food using sunlight, water and carbon dioxide, they do not absorb food from the soil) •describe how changes to light and fertiliser affect plant growth Tomato seedlings and sunflowers (seed dispersal-see objective below). The Children could also grow snapdragons or sweetpeas.	

Yorke Mead Primary School
Science Curriculum

Pupils should use the local environment throughout the year to observe how different plants grow.	**Investigate the way in which water is transported within plants** •describe how the stem has a role in support and nutrition (transport of water) White Carnations	Compare the roots of different plants (e.g. desert plants or rainforest tree. Teacher Note: rainforest trees have very shallow roots as the quality of the soil is more and most of the nutrients are near the surface)
	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. • describe why plants need flowers • describe the role of bees and insects in pollination • describe how pollen and seeds are dispersed *Horse chestnut (in January – see video). It has its flowers ready in December but won't open up until march. Protected by a hard sticky shell to stop animals from eating them before they flower.*	Compare methods of seed dispersal
Working Scientifically: compare the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.		

Year 3 **Key Theme :** Animals including humans	**Key vocabulary: nutrients, nutritious, carbohydrates, protein, vitamins, fats, minerals, water, fibre** **Skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps

Yorke Mead Primary School
Science Curriculum

Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Y2 **Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene Y2**	**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.** • name the components of a healthy and varied diet • describe how their diet is balanced	See working scientifically. • describe an adequate and varied diet for humans, recognising that there are many ways of achieving this • describe the role of different food groups • compare and contrast diets of animals including pets
Notice that animals, including humans, have offspring which grow into adults. Y2	**Identify that humans and some other animals have skeletons and muscles for support, protection and movement.** • describe some observable characteristics of bones • describe the main functions of their skeletons • state that movement depends on both skeleton and muscles • state that when one muscle contracts another relaxes	Describe some advantages of having an internal skeleton over no skeleton or an exoskeleton Describe problems associated with broken bones or bones diseases They 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.
Working Scientifically: 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. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy, and design meals based on what they find out.		

Year 3 **Key Theme :** Rocks LINK WITH GEOGRAPHY	**Key Vocabulary: Rock, natural, man-made, igneous, metamorphic, sedimentary, fossils, living things, soil, compression, environment, organic, hard / soft, permeable/impermeable, density, durable, erosion, weathering**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Identify and compare the suitability of a variety of everyday materials, including wood, metal,	**Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.** Linked with work in geography,	• relate the simple physical properties of some rocks to their formation

Yorke Mead Primary School
Science Curriculum

plastic, glass, brick, rock, paper and cardboard for particular uses (y2)	pupils should explore different kinds of rocks and soils, including those in the local environment • classify rocks from the evidence of investigations • explain that rocks are used for different purposes dependent on their physical properties • explain that different types of rock react differently to physical forces (e.g. water, rubbing) *Use the grounds to spot rocks where are they? Are the natural or man- made?*	• explain how a model (e.g. biscuits, chocolate bars) can be used to represent sedimentary, metamorphic and igneous rocks
	Describe in simple terms how fossils are formed when things that have lived are trapped within rock	Describe how Mary Anning discovered fossils • explain why we do not see the soft parts of animals in fossils
	Recognise that soils are made from rocks and organic matter. Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment Recognise that soil contains dead plants and animals Recognise that there is rock under all surfaces and that soils come from rocks	Explain why we might find lots of the same types of rock in one place • explain why certain rocks are used for different purposes and why some rocks could be used for these jobs for example: Marble- kitchen worktops or statues Slate roof tiles Granite walls
Working Scientifically: 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. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.		

Yorke Mead Primary School
Science Curriculum

Year 3 **Key Theme :** Forces and Magnets	Key vocabulary: **force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock (Y1)	**Compare how things move on different surfaces** Describe how to make a familiar objects start moving by pushing or pulling Describe how to use pushes and pulls to make familiar objects speed up, slow down, change direction or shape Produce annotated drawings showing the direction of force needed to make an object move Describe some ways in which friction between solid surfaces can be increased or decreased	Produce annotated drawings showing the direction of force needed to make an object move and the other forces which impact the object (friction, gravity, air resistance, magnetic force)
Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (Y2) 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 (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass).	**Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance** (for example, opening a door, pushing a swing) - recall that magnets have a north and a south pole	
	Observe how magnets attract or repel each other and attract some materials and not others	Explain that a compass works by lining up with the Earth's magnetic field

	• describe the difference between a magnet and a magnetic material • describe what happens when some materials are put near a magnet	
	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 They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe). Describe the difference between a magnet and a magnetic material Describe what happens when some materials are put near a magnet	Describe some everyday uses of magnets
	Describe magnets as having 2 poles Recall that magnets have a north and a south pole	Describe how lodestone was found to be a naturally occurring magnet and was used as the first compass for navigation
	Predict whether 2 magnets will attract or repel each other, depending on which poles are facing Describe the direction of forces between magnets	
Working Scientifically: comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces, and gathering and recording data to find answers to their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.		

Yorke Mead Primary School
Science Curriculum

Year 3 **Key Theme :** Light	**Key Vocabulary : light, source, dark, shadows, reflect, visible, sun, opaque, absence, bounce, mirror, ray, beam, glare, pupil, retina, travel, straight, translucent, transparent, block**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
EYFS: puppet shadows	**Recognise that they need light in order to see things and that dark is the absence of light** • describe and compare some light sources • state that light sources are seen when light from them enters the eyes • explain that places are dark because there is no light and a light source is needed to help us see in such places	Describe how nocturnal animals are adapted to use what little light there is or their other senses in the dark (e.g. cats, aye-aye, lemurs)
Y1: Observe and describe weather associated with the seasons and how day length varies Pupils should be warned that it is not safe to look directly at the sun, even when wearing dark glasses.	**Notice that light is reflected from surfaces** 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. E.g. • demonstrate light travelling using a torch and record light bouncing off a mirror • identify suitable reflective clothing for travelling in the dark	Describe how Percy Shaw invented cat's eyes and explain their importance to road safety

	• explain that they cannot see shiny objects in the dark because there are no light sources	
	Recognise that light from the sun can be dangerous and that there are ways to protect their eyes They should think about why it is important to protect their eyes from bright lights. Note: pupils should be warned that it is not safe to look directly at the sun, even when wearing dark glasses.	Using scientific vocabulary, design a product that could be used to protect their eyes from the sun, using their understanding of how light travels and materials that could be used.
	Recognise that shadows are formed when the light from a light source is blocked by an opaque object They should look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change e.g. • recognise that shadows are similar in shape to the objects forming them • explain that shadows are formed when light from a source is blocked • state that even transparent objects block some light and form shadows • describe the difference in shadows cast by opaque, translucent and transparent materials • explore how to make shadows of different shapes and sizes	Use ideas about shadows to make predictions about the shadows formed by different objects or materials
	Find patterns in the way that the size of shadows change	Describe how the length of a shadow changes throughout the day as the sun moves across the sky
Working Scientifically: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.		

Yorke Mead Primary School
Science Curriculum

Year 4 **Key Theme : Living things and their habitats** (taught over two half terms – large unit of work)	**Key Vocabulary: organism, variation, classification (insect, mammal, bird, reptile, amphibian, fish) invertebrate, vertebrates, global, local, characteristic, key, habitat, environment, wildlife, endangered, extinct, conservation**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Explore and compare the differences between things that are living, dead, and things that have never been alive Y2	**Recognise that living things can be grouped in a variety of ways** Explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. Note: Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses.	Explain why it is necessary to use a reasonably large sample when investigating the preferences of small invertebrates
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	**Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment**	Explain why some animals are hard to classify (e.g. platypus, echidna, bat, flightless birds)

kinds of animals and plants, and how they depend on each other Y2	- Describe some of the characteristics of the vertebrate (fish, mammals, amphibians, reptiles and birds) groups (e.g. warm-blooded, have fur, lay eggs)	
Identify and name a variety of plants and animals in their habitats, including microhabitats. Y2	**Recognise that environments can change and that this can sometimes pose dangers to living things.** Identify how the habitat changes throughout the year Explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation • explain that different organisms are found in different habitats because of differences in environmental factors	Describe how humans have negatively impacted environments (e.g. pollution, deforestation, introduction of invasive species)
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 Y2	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.	To produce their own means of recording their observations, including photographs, annotated sketches and linking to scientific research.
Explore and compare the differences between things that are living, dead, and things that have never been alive Y2	**Construct and interpret a variety of food chains, identifying producers, predators and prey** (Teacher Note: statement moved from NC 'Animals including humans' to improve progression within topics) - recognise that green plants are the ultimate source of food for all animals - recognise that a food chain must always start with a green plant (a producer) - represent feeding relationships within a habitat	Use food chains to predict what might happen to the numbers of an organism if there are suddenly more predators or less prey

Yorke Mead Primary School
Science Curriculum

	with food chains beginning with a green plant which 'produces' food for the other organisms - use and understand the terms: producer, predator and prey - know the function of some of the more complex features which aid survival in specific habitats (e.g. gills, blubber, camouflage) - describe why different animals and plants live in different habitats	
Working Scientifically Use and make simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.		

Year 4 **Key Theme : Sound**	**Key Vocabulary: amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instrument, wave, sound, travel, vibrations**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Y1 *senses afternoon (linked to mindful tasting) •compare differences in texture, sounds and smells	**Identify how sounds are made, associating some of them with something vibrating** Explore and identify the way sound is made through vibration in a range of different musical instruments from around the world: • identify what is vibrating in a range of musical instruments • generalise that sounds are produced when objects vibrate	To draw annotated diagrams Group instruments independently by the way sounds are produced

Yorke Mead Primary School
Science Curriculum

	• describe how sounds are generated by specific objects • suggest ways of producing sounds	
	Recognise that vibrations from sounds travel through a medium to the ear	•Recognise that sounds travel through solids, water and air • Explore how sound travels through a variety of materials
	Find patterns between the pitch of a sound and features of the object that produced it	Describe ways in which the pitch of a sound made by a particular instrument or vibrating object can be raised or lowered
	Find patterns between the volume of a sound and the strength of the vibrations that produced it suggest how to change the loudness of the sounds produced by a range of musical instruments	Identify suitable materials to use for sound insulation
	Find out how the pitch and volume of sounds can be changed in a variety of ways. • distinguish between pitch and volume (loudness) • know that altering vibrations alters the pitch or volume • explore how to vary the pitch and volume of sounds from a variety of objects or instruments	Generalise the effects of changes on sound (e.g. the tighter the tension the higher the pitch)
	Recognise that sounds get fainter as the distance from the sound source increases. describe what they observe when they move further away from the source of a sound	• Recognise that sound can be reflected from a surface which can cause an echo • Describe how some animals use echo-location
Working Scientifically:		

Yorke Mead Primary School
Science Curriculum

Find 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. They could make and play their own instruments by using what they have found out about pitch and volume.

Year 4 **Key Theme : Electricity**	**Key Vocabulary: electricity, neutrons, protons, electrons, nucleus, atom, electric current, appliances, mains, crocodile clip, wires, bulb, bulb holder, battery (cell), battery holder, motor, buzzer, switch, electrical conductor, electrical insulator.**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Children have explored what metal is used for e.g. coins, cans, cars. However, they have not explored 'electricity'. **Y2**	**Identify common appliances that run on electricity**	What is electricity? What does electricity produce? (Light, sound, movement and heat.) Can the children produce their own fact file or quiz?
	Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers 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 • Draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6. • Make circuits from drawings provided	Are methodical in tracing faults in simple circuits

Yorke Mead Primary School
Science Curriculum

	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 • describe the effect of making and breaking one of the contacts on a circuit • explain why some circuits work and others do not	Set up their own series of enquiries that explore electrical circuits and various effects.
	Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • describe how switches work • construct a home-made switch	Are methodical in tracing and correcting faults.
	Recognise some common conductors and insulators, and associate metals with being good conductors. construct simple circuits and use them to test whether materials are electrical conductors or insulators	• relate knowledge about conductors and insulators to their use in electrical appliances • describe the use of conductors and insulators in components including connecting wires • identify graphite and playdough as non-metal conductors and explain why this is unusual
	Note: Pupils might use the terms current and voltage, but these should not be introduced or defined formally at this stage. Pupils should be taught about precautions for working safely with electricity.	
Working Scientifically: observe patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.		

Year 4 **Key Theme : Animals including humans**	**Key Vocabulary: digestive system, teeth, tongue, mouth, oesophagus, stomach, gall bladder, small intestine, pancreas, rectum, anus, large intestine, liver, duodenum;** **Teeth, tooth, canine, incisor, molar, premolar;**

Yorke Mead Primary School
Science Curriculum

Teeth and Digestion	**Producer, consumer, predator, prey**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
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. Y3	**Describe the simple functions of the basic parts of the digestive system in humans** for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine • describe the role of each organ in the digestive system • Explore questions that help them to understand their special functions	Explain why food needs to be broken down
Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Y3 • describe some observable characteristics of bones • describe the main functions of their skeletons • state that movement depends on both skeleton and muscles • state that when one muscle contracts another relaxes	**Identify the different types of teeth in humans and their simple functions** • describe the role of each type of teeth in digestion • explain how they should look after their teeth and recognise why they need to do so	Explain why humans do not have a full set of adult teeth at birth explain why dentists are concerned about the amount of sugar children have
	Construct and interpret a variety of food chains, identifying producers, predators and prey (could also be taught with Animals and their habitats). state that animals have different diets and may have different kinds of teeth • know the function of some of the more complex features which aid survival in specific habitats (e.g. gills, blubber, camouflage) • describe why different animals and plants live in different habitats	Explain why the teeth of certain types of animals need to be different Explain how fossilised teeth give us clues about an animals' diet

Yorke Mead Primary School
Science Curriculum

	Teach within living things and their habitats: • recognise that green plants are the ultimate source of food for all animals (• recognise that a food chain must always start with a green plant (a producer) • represent feeding relationships within a habitat with food chains beginning with a green plant which 'produces' food for the other organisms • use and understand the terms: producer, predator and prey	
Working Scientifically: comparing the teeth of carnivores and herbivores and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.		

Year 4 **Key Theme : States of matter**	**Key Vocabulary: solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection.**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Observe changes across the 4 seasons Y1 **Observe and describe weather associated with the seasons and how day length varies** **Y1** **Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Y2**	**Compare and group materials together, according to whether they are solids, liquids or gases** 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) • Recognise that air is a material and that it is one of a range of gases which have important uses • Recognise that gases flow from place to place • Know that gases can be easily compressed • Describe the differences between solids and liquids	Describe the behaviour and properties of gases Make clear distinctions between the properties of solids, liquids and gases Explain why granular solids have some of the properties associated with liquids Explain why some substances are hard to classify as solids, liquids and gases (e.g. whipped cream, mousse, mayonnaise,

Yorke Mead Primary School
Science Curriculum

Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching Y2	• Compare simple solids and liquids (e.g. in terms of ease of squashing or pouring) • Make clear distinctions between the properties of solids, liquids and gases • Identify a wide range of contexts in which changes of state take place • Describe a few examples where these changes occur • Recognise that for a substance to be detected by smell, some of it must be in the gas state	muddy water, fizzy drinks, cornflour and water)
	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) 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. **Note:** Teachers should avoid using materials where heating is associated with chemical change, for example, through baking or burning • **D**escribe how when ice melts it turns to liquid and how when water freezes it becomes ice • Describe how these processes can be reversed • Describe how liquids evaporate to form gases and how gases condense to form liquids • explain the relationship between liquids and gases in terms of evaporation and condensation	Compare the boiling point of different liquids Explore the effect of salt on ice Explain why salt is put on the roads in winter
	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • Sequence the changes that happen in the water cycle • Describe the water cycle in terms of these processes • Explain the relationship between liquids and solids in terms of melting and freezing	

Yorke Mead Primary School
Science Curriculum

	• Know that temperature can affect the rate of evaporation or condensation • Describe the effect of temperature on evaporation • Explain how changing conditions affects processes such as evaporation and condensation • Identify a range of contexts in which changes take place (e.g. evaporation of puddles in the school playground or from clothes on the washing line, condensation in the bathroom)	
Working Scientifically: group and classify a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.		

Year 5 **Key Theme : Earth and Space**	**Key Vocabulary: Earth, Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Planets, Solar System, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric** **Scientists/mathematicians: Ptolemy, Alhazen and Copernicus**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Observe changes across the 4 seasons **Y1** **Observe and describe weather associated with the seasons and how day length varies**	**Describe the movement of the Earth, and other planets, relative to the Sun in the solar system** 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).	• Explain that gravity is a force of attraction and it is what holds the planets in orbit around the Sun and the Moon in orbit around the Earth • use simple physical models to explain effects that are caused by the movement of the Earth
Y3 Light **Recognise that they need light in order to see things and that dark is the absence of light**	**Describe the movement of the Moon relative to the Earth**	• Explain that the changes in the appearance of the Moon over a period of 28 days arise from the Moon orbiting the Earth once every 28 days

Yorke Mead Primary School
Science Curriculum

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**		
	Describe the Sun, Earth and Moon as approximately spherical bodies They should understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).	Explore scientist Mae C Jemison – 1st African American female astonaught. Can they produce a fact file to inform their peers?
	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. Pupils should be introduced to a model of the Sun and Earth that enables them to explain day and night •Recognise that it is daylight in the part of the Earth facing the Sun • Explore and describe how a shadow from the Sun changes over the course of a day • Explain in terms of the rotation of the Earth why shadows change and the Sun appears to move across the sky during the course of the day • Explain why it is night time in Australia when it is day time in England	To create a sun dial and set up their own investigation.

Yorke Mead Primary School
Science Curriculum

	Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.	
	Pupils should find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus	• Explain how ideas about the solar system have changed over time • Find out about Katherine Johnson – NASA'S human computer! See her biography on line,
Working Scientifically: compare the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.		

Year 5 **Key Theme : Forces** (teach with history topic of WW1/2 – parachutes)	**Key Vocabulary: force, push, pull, opposing, balanced, gravity, air resistance, water resistance, friction, Isaac Newton, Galileo Galilee, streamline, brake, gear, mechanism, lever, cog, pulley, machine**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Y3 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**	**Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object** • Identify weight as a force • Draw force diagrams with arrows showing the direction of forces acting on an object • Observe and explore the effect of several forces on objects • Describe some situations in which there is more than once force acting on an object	• Draw force diagrams, labelling the numerous forces acting upon the object for different scenarios e.g. a diver diving into a pool • To create and set up their own scientific enquiries, investigating the link between weight and mass. They should make links to scientists such as Isaac Newton.

Yorke Mead Primary School
Science Curriculum

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**	• Describe and explain the motion of some familiar objects in terms of several forces acting on them • Identify forces on an object as either balanced or unbalanced • Use the terms 'balanced' and unbalanced' when describing several forces on an object • Explain that balanced forces on an object cause it to remain stationary or travel at the same speed • Explain that unbalanced forces on an object cause it to speed up, change shape or slow down Pupils might find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.	
	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces • Explore falling objects and raise questions about the effects of air resistance. • Understand that air resistance is the frictional force of air on objects moving through it • Explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall. • 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. • Describe some of the factors that increase friction between solid surfaces and increase air and water resistance	• Compare the tread on bicycle tyres according to how much friction they need • Identify streamlined objects and describe why they have been designed in this way (e.g. cycling helmets, formula 1 cars, dolphins)

Yorke Mead Primary School
Science Curriculum

	• Describe situations in which frictional forces are helpful as well as those in which frictional forces are unhelpful	
	Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Pupils should explore the effects of levers, pulleys, gears and simple machines on movement.	• Describe how levers, pulleys and gears are used in everyday life (e.g. having gears can make it easier to pedal a bike, a bottle opener makes it easier to open a bottle lid) • Explain how introducing gears onto bikes has changed cycling
Working Scientifically: explore falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.		

Year 5 **Key Theme :** Properties and changes of materials (taught over two half terms)	**Key Vocabulary:** material, property, magnetic, hard, transparent, flexible, permeable, Thermal, conductor, insulator, heat, variable, electric, resistance, circuit, dissolve, soluble, insoluble, liquid, solid, separate, mixture, solution, suspension, evaporate, filter, sieve, magnet, attract, Particles, reversible, irreversible, physical, chemical, reaction, reactant, product.	
Previous Learning To be reinforced:	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4. (See below)	**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.** Note: pupils are not required to make quantitative measurements about conductivity and insulation at this stage. It is sufficient for them to observe that some conductors will produce a brighter bulb in a circuit than others and that some materials will feel hotter than others when a heat source is placed	Explain why some materials are good thermal insulators

	against them. Safety guidelines should be followed when burning materials. • Suggest why particular materials are used for different jobs depending on their properties	
Y3 Magnetism • **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.**	**know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution** • Name some materials that will and some that will not dissolve in water • Recognise that although it is not possible to see a dissolved solid, it remains in the solution • Describe melting and dissolving and give everyday examples of each • Identify and explore factors that affect the rate at which a solid dissolves • Separate an undissolved solid from a liquid by filtering • Recognise that an undissolved solid can be separated from liquid by filtering • Recognise that a solid can be recovered from a solution by evaporation •	Describe the difference between melting and dissolving
Y4 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, and measure or research the temperature at which this happens in degrees Celsius (°C)**	**Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating** • Describe the properties of mixtures which can be separated by filtration • Describe some methods that are used to separate simple mixtures	Recognise that inks and dyes are often mixtures of different colours and these can be separated by chromatography Explain why ink or dye moves up the paper in chromatography

Yorke Mead Primary School
Science Curriculum

• **Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.**	• Explain that when solids dissolve they break up so small they can pass through the holes in the filter paper • **U**se knowledge about how a specific mixture can be separated to suggest ways in which other similar mixtures might be separated • Recognise that some changes can be reversed and some cannot	
<u>Y4 Electricity</u> • **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.**	**Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic**	To set up a scientific investigations that proves or disproves a hypothesis that you have created about the properties of materials.
	Demonstrate that dissolving, mixing and changes of state are reversible changes. They should explore reversible changes, including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes: • Observe and explore a variety of chemical changes (e.g. burning) • Identify whether some changes are reversible or not	Children to create further scientific enquires based on their findings, interests and ideas.

	• Classify some changes as reversible (e.g. dissolving) and others as irreversible (e.g. burning) • Recognise that irreversible changes often make new and useful materials • Describe what happens when acid and bicarbonate of soda are mixed	
	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 Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. • Explain that in some cases the new materials made are gases and identify some evidence for the production of gases (e.g. vigorous bubbling)	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. Describe the properties of new materials (e.g. aerogel, silly putty, wrinkle-free cotton)
Working Scientifically: carry out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?' They might compare materials in order to make a switch in a circuit. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.		

Year 5 **Key Theme : Animals including humans** (teach / merge with Living things and their habitats)	**Key Vocabulary: Egg, sperm, fetus, baby, toddler, child, teenager, adult, old age, development, growth, human, infancy, childhood, adulthood, adolescence, prenatal, changes, breasts, pubic hair, hips, facial hair, body hair, genitals, muscular development, menstruation.**	
Previous Learning	**Core Learning Intentions**	**Extension Opportunities**

Yorke Mead Primary School
Science Curriculum

To be reinforced	Age Related	Next steps
Y2 Notice that animals, including humans, have offspring which grow into adults **Y3 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. Y3**	**Describe the changes as humans develop to old age** Pupils should draw a timeline to indicate stages in the growth and development of humans.	To identify any patterns in growth. As a GP, to produce a 'things to expect' aspect of their timeline. Children should also complete the working scientifically element to his activity listed below.
Y4: Describe the simple functions of the basic parts of the digestive system in humans for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine **Y4:Identify the different types of teeth in humans and their simple functions**	They should learn about the changes experienced in puberty. - describe the simple functions of parts of the human reproductive system -	Sort changes into physical and emotional, as well as boys, girls and both genders – this could be presented as a Venn diagram
Construct and interpret a variety of food chains, identifying producers, predators and prey		
Working 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**.**		

Year 5 **Key Theme : Living things and their habitats** Flowers. Dissect: Primroses/daffodils Propagate: Basil	**Key Vocabulary: sexual, asexual, reproduction, cell, fertilisation, pollination, male, female, pregnancy, gestation, young, Jane Goodall, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant (mammals: monotremes, marsupials, placental)**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Y4	**Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird**	Explain what is unusual about the life cycle of a kangaroo or koala

Yorke Mead Primary School
Science Curriculum

Recognise that living things can be grouped in a variety of ways Explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. Note: Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses. **Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment** - Describe some of the characteristics of the vertebrate (fish, mammals, amphibians, reptiles and birds) groups (e.g. warm-blooded, have fur, lay eggs)	recognise the similarities in the life cycles of plants, animals and humans	
Y1 – Children grew runner beans and broad beans **Y2 – Children grew red onions from a bulb and a sunflower from a seed** **Y3 – Children grew sunflowers and tomatoes**	**Describe the life process of reproduction in some plants and animals**. Find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals*:* • Describe the functions of some parts of a flower • Describe the main functions of parts of a plant involved in reproduction (see below, use primroses) • Describe the processes of sexual and asexual reproduction in plants. Use basil to take cuttings and grow exact clones from its parent plant. • Compare methods of seed dispersal • Know that most animals reproduce by sexual reproduction compare methods of seed dispersal	*Plants that have been reproduced have a 'brother and sister' and these are identical opposites. If you bought two or three pots of the same Primroses (January). from B&Q you would see this* • Compare internal and external fertilisation in animals • Explain that living things need to reproduce if the species is to survive • Compare gestation periods (pregnancy) of different animals

	• Know that most animals reproduce by sexual reproduction <u>Using the school grounds:</u> *Seed dispersal: hazelnut tree (shows male and female parts) – in forest school - (wind pollination). Show children the catkins (no scent, not pretty to look at, no colour).* *Can drop the catkins on a black piece of card and watch the pollen come out.* (see video for guidance in the science folder) In addition – squirrels burying nuts, they only find 95% of them. The rest grow into trees. Birds eating berries and then excreting causing further plants to grow e.g. holly, elder Insect pollination: using flower heads rather than diagrams on the board. Buy a pot of Primroses (£1.75 from B&Q). this will contain approx. 15 flowers. Children to place thumbs either side if the flower head and gently pull apart to reveal the structure of the flower (male and female parts).	
	Study and raise questions about their local environment throughout the year (our school grounds are perfect for this – see above notes) <u>Links to history:</u> WW1: sticky weed, which can be found around the outside of the field, was used to bring down swelling.	Children to conduct their own research and observations – this might be ongoing throughout the year. Give them opportunities to record in their own way and to present where necessary.

Yorke Mead Primary School
Science Curriculum

	Stinging nettles, the Roman's brought in for flagellating; to circulate blood in order to keep warm and for medicine.	
	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	
	Find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.	**George Washington Carver** developed hundreds of products using the peanut, sweet potatoes and soybeans. He also was a champion of crop rotation and agricultural education.
Working Scientifically: observe and compare the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant (basil), for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.		

Year 6 **Key Theme : Living Things and Their Habitats: Classification**	**Key Vocabulary: classify, compare, bacteria, characteristics, classification, microorganism, organism, invertebrates (spider, worm, insect, snail), vertebrates (mammal, bird, amphibian, reptile, fish), flowering, non-flowering,** **Carl Linnaeus**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps

Yorke Mead Primary School
Science Curriculum

<u>Pupils should build on their learning about grouping living things in year 4 by looking at the classification system in more detail</u>. **Y4** **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** **Y5** **Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird** **Describe the life process of reproduction in some plants and animals**.	**Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals** • Understand why classification is important Introduce the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. • Describe how micro-organisms feed, grow and reproduce like other organisms • Recognise that there are useful micro-organisms which can be used in food production • Explain how micro-organisms can move from one food source to another or from one animal to another	• Compare the rate of reproduction in microorganisms to other animals • Describe how the development of the microscope has contributed to our understanding of microorganisms • Describe how ideas about hygiene have changed over time (e.g. Semmelweis)
	Give reasons for classifying plants and animals based on specific characteristics 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). They should discuss reasons why living things are placed in one group and not another.	• Devise own keys to classify organisms and objects
	Find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.	• Describe early ideas about classification (e.g. Aristotle)

Yorke Mead Primary School
Science Curriculum

Working Scientifically: use classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system. Describe evidence, from investigations, that yeast is living

Year 6 **Key Theme : Animals including humans: The Circulatory System**	**Key Vocabulary:** System, human, body, **circulatory, circulation, skeletal, muscular, digestive, organs, parts, heart, lungs, blood vessels**, **aorta, atrium**, **ventricle**, **artery, vein, pulmonary**, **superior vena cava**, **inferior, pulmonic, aortic valve, trachea, bronchus, bronchiole, diaphragms, air sacs, alveoli, capillary, intercostal muscles and ribs.** **Nutrients, nutrition, water**, system, **digestive, skeletal, muscular, stomach, gall bladder, liver, small intestine, large intestine, pancreas, liver, kidneys, rectum, bladder, Healthy, lifestyle, diet, exercise, nutrition, nutrients, food, water, cells**, body, human, **organs, vitamins, minerals, protein, fats, carbohydrates, water, fibre, oxygen, pulse, heart rate,**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Y3 **Identify that humans and some other animals have skeletons and muscles for support, protection and movement.** Y4: **Describe the simple functions of the basic parts of the digestive system in humans** for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine	**Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood** 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. • describe the different functions of the blood (e.g. transporting and protecting) • know that the blood comes from the heart in arteries and returns to the heart in veins • know that blood carries oxygen and other essential materials around the body	• explain the effect of diet on particular organs of the body / aspects of health • explain the effect of exercise on particular organs of the body/aspects of health • explain how ideas about the circulatory system have changed over time

Yorke Mead Primary School
Science Curriculum

Y5: Describe the changes as humans develop to old age Pupils should draw a timeline to indicate stages in the growth and development of humans.	**Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies 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. • recognise that care needs to be taken with medicines and that they can be dangerous • give several reasons why it is sometimes necessary to take medicines • identify some harmful effects of drugs • name the major groups into which food is categorised and identify sources for each group • describe the main function of organs of the human body	• explain how ideas about smoking have changed over time • explain why advice on diet changes (e.g. butter vs margarine, five a day, tax on sugary drinks) Marie M Daly. Her work opened a new understanding of how foods and diet can affect the health of the heart and the circulatory system
They should learn about the changes experienced in puberty.	**Describe the ways in which nutrients and water are transported within animals, including humans** • know that the blood comes from the heart in arteries and returns to the heart in veins • know that blood carries oxygen and other essential materials around the body	Explore osmosis and diffusion (children don't need to know the scientific details of diffusion & osmosis, just that they are processes used to transport nutrients and water. Osmosis = water only; diffusion = O_2 CO_2 Toxins Hormones (use skittles and jelly snakes).
Working Scientifically: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health. E.G. discover that during exercise the heart beats faster to take blood more rapidly to the muscles; make careful measurements of pulse rate		

Yorke Mead Primary School
Science Curriculum

Year 6 **Key Theme : light**	**Key Vocabulary: shadow, light, filter, colour, reflect, absorb, refract, spectrum, wavelength, prism, visible, lens, angle, incidence, straight, ray, beam, wave, photon, energy.**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
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.	**Recognise that light appears to travel in straight lines**	Explore the angle of incidence and the angle of reflection using card and mirrors. The children should use protractors to measure each angle to prove this theory.
Year 3 (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 change**	**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** • Understand that in order to be seen, all non-luminous objects must reflect light • Diagrammatically represent light from sources and bouncing off reflective surface using arrows	Know that, when sunlight passes through some objects, coloured light is produced (for example in rainbows, soap bubbles and prisms)
	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 • Draw diagrams to illustrate how light is travelling from the source to the eye	Describe how curved mirrors distort a reflection
Y5 Earth and Space: **Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.** Pupils should be introduced to a model of the Sun and Earth that enables them to explain day and night	**Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.** • Describe a variety of ways of changing the size of the shadow produced by an object	Children to set up their own lines of enquiry based on interests, predictions and prior learning from Y3

Yorke Mead Primary School
Science Curriculum

•Recognise that it is daylight in the part of the Earth facing the Sun • Explore and describe how a shadow from the Sun changes over the course of a day • Explain in terms of the rotation of the Earth why shadows change and the Sun appears to move across the sky during the course of the day • Explain why it is night time in Australia when it is day time in England	• Describe the relationship between the size of a shadow and the distance between the light source and an object • Diagrammatically represent the formation of shadows using arrow convention	
Working Scientifically: decide where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).		

Year 6 **Key Theme : Evolution and Inheritance** (taught over two half terms)	**Key Vocabulary: evolution, adaptation, inherited traits, inheritance, adaptive traits, natural selection, DNA, genes, variation, parent, offspring, fossil, environment, habitat, fossilisation, plants, animals, living things.** **Charles Darwin, Alfred Wallace,**	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
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.	**Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago** • Explain why we do not have a complete fossil record	• Describe the story of the peppered moth and how this provides evidence for natural selection
Y3 **Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties**	**Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents** be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what	• explain how antibiotic resistant bacteria provide evidence for natural selection • explain why we can see evidence for natural selection in fast reproducing organisms like bacteria (e.g. antibiotic

Yorke Mead Primary School
Science Curriculum

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.**	happens when, for example, Labradors are crossed with poodles	resistant bacteria and pesticide resistant insects) •
<u>Y5 Animals including humans</u> **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**	**Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.** 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 • Explain how being well adapted to an environment means an organism is more likely to survive	Explain that animals which are better adapted to an environment are more likely to survive, reproduce and pass on characteristics to their offspring meaning the animal species will gradually change and evolve (giraffe with the tallest neck could reach more leaves to feed on). Explain how the introduction of a new species to an isolated environment can affect native species (e.g. Dodo, Kakapo or Stephen's Island Wren) •
	Find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.	Compare the ideas of Darwin and Lamarck about evolution
	<u>Note:</u> At this stage, pupils are not expected to understand how genes and chromosomes work.	
Working Scientifically: observe and raise questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.		

Year 6 **Key Theme : Electricity**	**<u>Key Vocabulary:</u> Electricity, electrical current, alternating current, direct current, battery, cell, bulb, wire, open switch, closed switch, motor, buzzer, circuit, voltage, brightness, loudness,**

Yorke Mead Primary School
Science Curriculum

	Thomas Edison, Nikola Tesla, Alessandro Volta,	
Previous Learning To be reinforced	**Core Learning Intentions** Age Related	**Extension Opportunities** Next steps
Y4 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.**	**Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit** • Explore how to change the brightness of bulbs and the volume of a buzzer • Recall what causes the brightness of bulbs or the volume of a buzzer to change • Recall that the amount of electricity is measured in voltage	• Explore the effect of thickness of a wire in a circuit • Describe the differences between wires usually used for circuits and fuse wires •Describe what would happen if all lights in a home were connected in the same circuit and one
	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 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 • Compare different circuits (e.g. for brightness of bulb)	Can you make a dimmer switch? https://www.youtube.com/watch?v=hfyknX2W694

Yorke Mead Primary School
Science Curriculum

	Use recognised symbols when representing a simple circuit in a diagram. **D**raw circuit diagrams and construct circuits from diagrams using conventional symbols	Explain current in circuits using simple models and analogies (e.g. piped water, bicycle chain, children and sweets)
	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: systematically identify the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.		