



Science Curriculum Map at STM



Key strands:

Our scheme of work fulfils the statutory requirements outlined in the National Curriculum (2014). The National Curriculum Programme of Study for Science aims to ensure that all pupils:

Conceptual Knowledge	Working Scientifically	Science Capital
develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics	develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them	are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Key Disciplines of Science

Pupils will be taught units of work that cover and go beyond the requirements of the National Curriculum in the specific disciplines of biology, chemistry and physics.

Biology	Chemistry	Physics
Biology offers pupils the opportunity to engage with the diversity of living organisms, and their local and wider environment. It enables pupils to understand their own bodies and the changes they experience, and to apply a range of enquiry approaches to investigating and exploring the living world.	Chemistry is a field of science that studies the properties of matter and how matter interacts with energy.	Physics is the natural science that studies matter, its fundamental constituents, its motion and behaviour through space and time, and the related entities of energy and force.



Science Curriculum Map at STM



Science in Early Years Provision

The following statements from the 2020 Development Matters are prerequisite skills for Science within the national curriculum.

	Communication and Language	Personal, Social & Emotional Development	Understanding the World
On entry: (From Nursery/F1)	<ul style="list-style-type: none"> Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" 	<ul style="list-style-type: none"> Make healthy choices about food, drink, activity and toothbrushing. 	<ul style="list-style-type: none"> Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Begin to make sense of their own life-story and family's history. Explore how things work. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.
Reception	<ul style="list-style-type: none"> Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts. Make healthy choices about food, drink, activity and toothbrushing. 	<ul style="list-style-type: none"> Know and talk about the different factors that support their overall health and wellbeing: <ul style="list-style-type: none"> -regular physical activity -healthy eating -toothbrushing -sensible amounts of 'screen time' -having a good sleep routine -being a safe pedestrian 	<ul style="list-style-type: none"> Explore the natural world around them. Describe what they see, hear and feel while they are outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them.
ELG	<ul style="list-style-type: none"> Make comments about what they have heard and ask questions to clarify their understanding. 	<ul style="list-style-type: none"> Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. 	<ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.



Science Curriculum Map at STM



Science Curriculum Overview (summary)

	Advent 1	Advent 2	Lent 1	Lent 2	Pentecost 1	Pentecost 2
R	Listening, Attention and Understanding: Make comments about what they have heard and ask questions to clarify their understanding. Managing Self: Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.					
R/Y1	Animals including humans Human Body Senses	*Taking Care of the Earth Pollution, Recycling	Everyday Materials Material and magnets Properties and uses of materials, magnets	Animals including humans Animals and their needs Grouping animals. carnivores, herbivores, omnivores	Plants What plants need ; parts of plants ; plants we eat	Seasonal Changes Seasons and Weather The four seasons; clouds, weather forecasting
Y1/2	Animals including humans Human Body Senses Skeleton	*Taking Care of the Earth Pollution, Recycling	Everyday Materials Materials and matter uses; properties solid and liquid; changing solid objects	Animals including humans Animals and their habitats Grouping animals. Carnivores, herbivores, omnivores. Rainforest and desert habitats.	Plants Parts of plants ; seeds and bulbs; deciduous and evergreen; food and farming	Seasons and Weather The four seasons; weather forecasting, clouds, graph
Y2	Animals including humans Human Body skeletons, muscles, healthy eating, circulation, germs	Electricity* Circuits; investigating conductive materials	Everyday Materials Materials and matter uses; properties of liquids; changing solids	Living things and their habitats Dead or alive, habitats: rainforest, desert, meadow, underground	Plants Plants around us; Seeds and bulbs , food and Farming	Earth and Space* Astronomy Introducing the Solar System
Y3	Animals including humans Human Body Muscles, skeletons, nervous system, digestive system	Forces and Magnets Gravity, friction, magnetic poles and fields	Light Light and Dark; Shadows; Transparent and opaque Mirrors and reflection	Cycles in Nature* The Four Seasons (prior learning); seasonal cycles in Plants ; life cycle of a plant; animal Migration; life Cycle of a Frog	Plants Flowering Plants Water transportation ; life cycle of flowering plants	Rocks rocks, fossils, soil
Y3/4	Animals including humans Human Body Cells and nutrients, Teeth and senses, digestion, healthy diet, vitamin and minerals.	Forces and Magnets Gravity, friction, magnetic poles and fields	The Water Cycle Evaporation, Condensation, Changing states of matter	Living Things and their habitats Classification of plants and animals animal classification , classes of vertebrates and invertebrates	Plants Water transportation ; life cycle of flowering plants. Classification of Plants	Rocks Rocks, fossils, soil
Y4/5	Animals including humans Human Body Human growth stages	Electricity Switches, circuits, conductors, insulators	Sound Pitch, volume and how we hear	The Water Cycle Evaporation, Condensation, Changing states of matter; precipitation	Forces Gravity, air resistance, water resistance and Friction, mechanisms	Earth and Space Astronomy Gravity, the moon
Y5	Animals including humans Human Body Human growth stages	Properties and changes of materials Changing states, separating mixtures; reversible changes	Forces Gravity, air resistance, water resistance and Friction, mechanisms.	Living Things Life cycles in living things, reproduction in Plants	Sound Pitch, volume and how we hear	Earth and Space Astronomy Gravity, our solar system. the Moon
Y6	Animals including humans Human Body Heart and circulatory system	Light How we see; shadows	Electricity Series / Parallel Circuits		Living things and their habitats Classifying organisms	Evolution Inheritance and adaptation



Science Curriculum Map at STM



Science Curriculum Overview

	Advent 1	Advent 2	Lent 1	Lent 2	Pentecost 1	Pentecost 2
R/Y1	The Human Body (Y1 PKC unit) Introduction to Our Body and Our Senses Eyes and Sight Ears and Hearing Touch, taste and smell Understanding Sensory Impairment	*Taking Care of the Earth (Y1 PKC unit) Taking Care of the Earth Earth's Natural Resources Logging Pollution Recycling	Materials and Magnets (Y1 PKC unit) Everyday Materials Properties of Materials Uses of Materials Magnets Investigation	Animals and their Needs (Y1 PKC unit) 1. Amazing Animals (Introduction to Animals) 2. Grouping animals: Fish, amphibians, reptiles, birds and mammals 3. Grouping animals: carnivores, herbivores and omnivores 4. Animals as pets 5. Describing animals	Plants (Y1 PKC unit) What plants need Parts of plants Seeds 4. Deciduous and evergreen plants 5. Plants we eat	Seasons and Weather (Non-PKC Y1 unit) Investigations knowledge focus: the four seasons; clouds and what they tell us: cirrus, cumulus and stratus; and weather forecasting
Y1/Y2	The Human Body (Y1/2 mixed PKC planning) 1. Introduction to Our Body 2. Ears and Hearing (Cycle B) 3. Food, taste and smell 4. Our skin, skeleton and muscles	*Taking Care of the Earth (Y1 Non-PKC unit) Investigations knowledge focus: Pollution; recycling and Earth's natural resources.	Materials and Matter (Y2 non-PKC unit) 1. Materials and their uses 2. Matter 3. Changing Solid Objects 4. Liquids and their properties	Animals and their Habitats (Y1/2 Mixed PKC unit) 1. Amazing Animals (Introduction to Animals) 2. Grouping animals: Fish, amphibians, reptiles, birds and mammals 3. Grouping animals: carnivores, herbivores and omnivores 7. Rainforests and deserts habitats (cycle A) 8. Underground habitats (cycle B)	Plants (Y1/2 Mixed PKC unit) 1. What plants need 2. Parts of plants 3. Seeds and bulbs 4. Deciduous and evergreen plants 5. Food and farming	Seasons and Weather (PKC Y1 unit) 1. The four seasons 2. Tools to record the weather 3. Using a graph to show information about the weather 4. Clouds and what they tell us: cirrus, cumulus and stratus 5. Weather forecasting
Y2	The Human Body 1. Animals, including humans, survival and offspring 2. The Skeletal System, The Muscular System and Exercise 3. The Digestive system and Healthy Eating 4. The Circulatory system 5. Germs, diseases and preventing illness	*Electricity 1. Introduction to Electricity 2. Safety 3. Exploring Circuits (A) 4. Exploring Circuits (B) 5. Investigating conductive and non-conductive materials	Materials and Matter 1. Materials and their uses 2. George de Mestral and Velcro 3. Matter under the microscope 4. Changing Solid Objects 5. Liquids and their properties	Living Things in their Environments 1. Dead or Alive 2. What is a habitat? 3. Rainforest and Desert habitats 4. Meadow habitats 5. Underground habitats	Plants 1. Plants around us 2. Seeds and bulbs 3. Comparative test 1 4. Comparative Test 2 5. Food and Farming	*Astronomy 1. Introduction to Astronomy 2. Model the Solar System 3. Orbit and Rotation 4. The Moon and its Phases 5. Constellations
Y3	The Human Body 1. The Muscular System 2. The Skeletal System 3. The Nervous System 4. Preparing to Eat 5. The Digestive System	Forces and Magnets 1. Forces (Gravity) 2. Friction 3. Magnet 4. Magnetic Poles and Fields	Light 1. Light and Dark 2. Transparent and opaque surfaces 3. Mirrors and reflection	*Cycles in Nature 1. The Four Seasons (prior learning) 2. Seasonal Cycles in Plants 3. Life Cycle of a Plant	Plants 1. Botany and Flowering Plants 2. Requirements for life and growth 3. Water transportation	Rocks (Y3 non-PKC unit) 1. Sorting rocks 2. How Rocks are Formed 3. Permeability



Science Curriculum Map at STM



		5. Investigating the strength of magnets	4. Shadows (to be done in Pentecost 2) 5. Finding patterns in changing shadows (to be done in Pentecost 2)	4. Animal Migration 5. Life Cycle of a Frog	in plants 4. Pollination in Flowering Plants 5. Seed Dispersal	4. Fossils 5. Soil
Y3/Y4	The Human Body (Y4 PKC unit) 1. Cells and Nutrients 2. Teeth and Senses 3. Digestion 4. A Healthy Diet 5. Vitamins and Minerals	Investigations: Forces and Magnets (Y3 non-PKC unit) 1. Forces (Gravity) 2. Friction 3. Magnet 4. Magnetic Poles and Fields 5. Investigating the strength of magnets	The Water Cycle (Y4 PKC unit) 1. States of Matter 2. Evaporation 3. Condensation 4. Precipitation 5. The Water Cycle	Classification of Plants and Animals (Y4 PCK unit) 1. Introduction to classification 2. Classes of vertebrates: Fish and Amphibians 3. Classes of vertebrates: Reptiles, Birds and Mammals 4. Classes of invertebrates: Insects, Arachnids and Molluscs 5. Classification of Plants	Plants (Year 3/4 Mixed PKC unit) 1. Botany and Flowering Plants 2. Water Transportation in Plants 3. Pollination in Flowering Plants 4. Seed Dispersal 5. Classification of Plants	Rocks (Y3 PKC unit) 1. Sorting rocks 2. How Rocks are Formed 3. Permeability 4. Fossils 5. Soil



Science Curriculum Map at STM



Y4/Y5	The Human Body (Y5 PKC unit) 1. Human Growth Stages 3. Slowing Down 5. The Endocrine System and Glands	Electricity (Y4 PKC unit) 1. Electrical Safety 2. Parts of a circuit 3. Switches 4. Thomas Edison and Lewis Latimer 5. Investigating conductive and nonconductive materials	Sound (Y4 PKC unit) 1. What is sound? 2. Speed of sound 3. Qualities of sound - Pitch and Volume 4. Human Voice 5. Ears- how we hear	The Water Cycle (Y4 non-PKC unit) (Y4 PKC unit) 1. States of Matter 2. Evaporation 3. Condensation 4. Precipitation 5. The Water Cycle	Forces (Y5 PKC unit) 1. Forces including gravity 2. Air resistance, water resistance and friction 3. Guided investigation: Paper Drop 4. Guided investigation: Paper Drop 5. Pulleys, gears and Levers Astronomy (Y5 non-PKC unit) 1. The Big Bang and the expanding universe 2. Gravity 4. The Moon	Ecology (Y4 PKC unit) 1. Living things and Habitats 2. Natural Cycles 3. Web of Living Things 4. Human Threats to the Environment 5. Ecology in our Local Area
Y5	The Human Body (Y5 PKC unit) 1. Human Growth Stages 3. Slowing Down 5. The Endocrine System and Glands	Materials 1. Properties of materials 2. Which material is best? 3. Solubility- which materials are most soluble/what solubility means 4. Separating mixtures: sieving, filtering, evaporating 5. Reversible changes: dissolving, mixing, change of state <i>Recap The Water Cycle unit from Y4</i>	Forces (Y5 non-PKC unit) 1. Forces including gravity 2. Air resistance, water resistance and friction 3. Guided investigation: Paper Drop 4. Guided investigation: Paper Drop 5. Pulleys, gears and Levers	Living Things 1. Life cycles of plants and animals in our local area 2. Reproduction in Plants 3. Life cycles of Mammals and Amphibians 4. Life cycles of insects and birds 5. The work of David Attenborough and Jane Goodall Sound (non-PKC unit) 1. What is sound? 2. Speed of sound 3. Qualities of sound - Pitch and Volume 4. Human Voice 5. Ears- how we hear	Astronomy 1. The Big Bang and the expanding universe 2. Gravity 3. Our Solar System 4. The Moon 5. Our Galactic neighbourhood	



Science Curriculum Map at STM



Y6	The Human Body 1. The Heart: Circulation of the Blood 2. Blood Vessels and Transport 3. Components of Human Blood 4. Blood Pressure and Heart Rate 5. Heart Rate- an Investigation	Light <i>Lesson 1 – recap key concepts from Y3 Light unit</i> 1. How light travels 2. How we see 3. Shadows and their shapes 4. The Colour of Light 5. Making a periscope	Electricity 1. Simple Series Circuits 2. Parallel Circuits 3. Switches 4. Planning an investigation 5. Investigation	Classification of Living Things 1. Classifying organisms 2. Cells: Plant and Animal cells 3. Taxonomy 4. Vertebrates 5. Invertebrates	Evolution 1. Fossils and Evolution 2. Inheritance 3. Adaptation 4. Charles Darwin 5. Alfred Wallace

*units included in the long term plan is in addition to the national curriculum content.



Science Curriculum Map at STM



Science in Early Years Provision

The following statements from the 2020 Development Matters are prerequisite skills for Science within the national curriculum.

Reception – Understanding the World			
Development Matters	ELG	How this achieved in EYFS	By the end of EYFS the children will know...
Reception: <ul style="list-style-type: none"> Learn new vocabulary Ask questions to find out more and to check what has been said to them Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen Use new vocabulary in different contexts Know and talk about different factors that support overall health and wellbeing such as: regular physical activity, healthy eating, toothbrushing, sensible amounts of screen time, having a good sleep routine Being a safe pedestrian. Explore the natural world around them 	The Natural World <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Managing Self <ul style="list-style-type: none"> Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding 	Autumn Term: <i>All about me:</i> <ul style="list-style-type: none"> Discussions around snack time and lunch time – healthy eating choices. Discussions around healthy living choices including washing hands, brushing teeth, eating and exercise. Story time and circle time to explore books focusing on staying healthy and the human body: Funnybones, Germs & What makes me. Naming body parts through songs: if you're happy and you know it and head, shoulders, knees and toes... Talking about our pets at home and drawing out pets in our family portraits. <i>Traditional Tales:</i> <ul style="list-style-type: none"> Build a boat for the Gingerbread man (floating and sinking exploration). Materials – what is the best material for the Three Pigs to build a house out of? <i>Seasonal changes – Autumn:</i> <ul style="list-style-type: none"> Exploring school's grounds and observing seasonal changes in the Autumn. Exploring natural autumnal resources in a Tuff Tray, asking questions and making/drawing observations. Explore hibernation and migration, looking at contrasting environments/animals around the world in the autumn. Explore harvest time in the UK and farming at harvest time. Observe seasonal weather changes and longer nights in the autumn compared to the summer. Festivals: Observe changes – light Spring Term: <i>Seasonal Changes – Winter & Spring:</i>	Knowledge: <ul style="list-style-type: none"> I know some foods that are healthy and not healthy. I know why we need to wash our hands and brush our teeth. I know how to use the toilet. I know how to get myself dressed. I know some body parts and can say what they do. I know who is in my family, including pets. I know the difference between animals and plants. I know the names of different animals: from our country and far away. I know the names of the four seasons. I know what the weather is like in each of the seasons. I know the main changes that happen in Autumn, Winter, Spring and Summer. I know that ice melts when it gets hot. I know that water turns into ice when it freezes. I know that some animals sleep during the winter. I know that the weather is different in different parts of the world. I know that a plant needs light, soil and water to grow. I know that plants die if they don't have enough water. I know that some food grows on trees and some comes from plants on and under the ground.



Science Curriculum Map at STM



<ul style="list-style-type: none"> Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. 	<p>the importance of healthy food choices.</p> <p>Listening, Attention and Understanding</p> <ul style="list-style-type: none"> Make comments about what they have heard and ask questions to clarify their understanding. 	<ul style="list-style-type: none"> Exploring schools' grounds and observing seasonal changes in the winter/spring. Explore compare/contrast our environment with polar regions. Discuss global warming and the impact on polar regions Observe seasonal weather changes in the winter/spring (ice exploration) Observe, question and draw spring plants/spring growth. Exploring natural autumnal resources in a Tuff Tray, asking questions and making/drawing observations. Spring walk around School grounds describing and discussing what is found. Explore the life cycle of frogs. Explore the life cycle of plants Still life observations and drawings of spring flowers. <p><i>Food:</i></p> <ul style="list-style-type: none"> Planting seeds and plants. Discover, compare and contrast food produce/grown in different climates around the world. <p>Summer Term:</p> <p><i>Life Cycles</i></p> <ul style="list-style-type: none"> Explore the life cycle of butterflies. <p><i>The UK outdoors:</i></p> <ul style="list-style-type: none"> Explore, observe and identify UK minibeasts. <p>Look after our local environment – build minibeast houses</p> <p><i>Seasonal Changes – Summer:</i></p> <ul style="list-style-type: none"> Exploring schools' grounds and observing seasonal changes in the summer. Observe seasonal weather changes in the summer <p><i>People who help us:</i></p> <ul style="list-style-type: none"> Explore looking after our community environment and recycling. Discuss how we can help look after our local and world environments. <p><i>Around the world:</i></p> <ul style="list-style-type: none"> Observe, explore and compare contrasting natural environments around the world: rainforest, great barrier reef, Kenya Explore, compare, contrast, observe, draw and discuss animals native to Australia, polar regions and Africa. Knowing where different animals come from. Explore creatures that live in the sea. 	<ul style="list-style-type: none"> I know that a tadpole becomes a frog and a caterpillar becomes a butterfly. I know that some materials float and some sink. I know that some materials are more suited to jobs than others. I know that my actions affect the world. I know the name of some insects. <p>Vocabulary:</p> <ul style="list-style-type: none"> Healthy, unhealthy, germs, head, legs, arms, hands, feet, shoulders, face, eyes, ears, mouth, tongue, teeth heart, brain, bones, skin. Dog, cat, fish, hamster, rabbit cow, horse, sheep, goat, elephant. Tiger, lion, crocodile, giraffe. Autumn, winter, spring, summer, weather, hot, cold, snowing, freezing, warm, wet, cloudy, harvest, farming, leaves, light, dark, desert, polar. Plants, grow, soil, sunlight, fruit, vegetable, tree, flower, bush, water. Life cycle, grow, change, tadpole, froglet, frog, larva, caterpillar, chrysalis, cocoon. Material, float, sink, plastic, fabric, wood, strong, waterproof, bendy, light, Pollution, recycle, rubbish, environment, community. Minibeast, ant, spider, worm, snail, habitat.
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Science Curriculum Map at STM



R/Y1 Class						
Term	Unit:	D	Knowledge goals	Pupils should be taught to... (NC)	What it might look like in the classroom:	Later learning
Advent 1	The Human Body (Y1 PKC)	B	<ul style="list-style-type: none"> To identify, name, label and draw the basic parts of the human body. To identify and label parts of our body relating to our senses. 	<ul style="list-style-type: none"> Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices (ELG). identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense (NC Yr1). 	<ul style="list-style-type: none"> Name body parts associated with senses. Model and label an eye. Sound walk and sounds they hear. Experiment how messages are sent to our brains – using everyday materials. Research scientists and the invention of Brialle. (e.g. Helen Keller). Describe basic parts of the human body. 	<p>In Year 2 pupils will be taught to: Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival. Describe the importance for humans to exercise, eating the right amounts of different types of food, and hygiene.</p> <p>In Year 3 pupils will be taught to: Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>In Year 4 pupils will be taught to: Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>In Year 5 pupils will be taught to: Describe the changes as humans develop to old age.</p> <p>In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. describe the ways in which nutrients and water are transported within animals, including humans.</p>
Advent 2	Taking care of the Earth (Y1 PKC)	B	<ul style="list-style-type: none"> To know that there are natural and man-made resources. Some resources are renewable and some are non-renewable To know that logging means cutting down trees. To identify some of the ways in which the environment can be polluted and how we can reduce pollution. 	<ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants (ELG). Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class (ELG). This unit is included in our curriculum in addition to the content of the National Curriculum. 	<ul style="list-style-type: none"> Describe how humans are destroying Earth. Sorting resources into natural and manufactured. Explain what pollution is. Explain what recycling is. Explain the need for logging but also its negative impact on the environment. WS: ask questions about different types of resources and its impact on Earth. 	<p>In Year 4 pupils will be taught to: recognise that environments can change and that this can sometimes pose dangers to living things</p> <p>In Year 5 pupils will be taught to: Describe the life process of reproduction in some plants and animals</p>
Lent 1	Materials and Magnets (Y1 PKC)	C	<ul style="list-style-type: none"> Materials have different properties. Magnetism is a force we cannot see. Materials, including magnets, have different uses around the home and in everyday life. 	<ul style="list-style-type: none"> Children know about similarities and differences in relation to places, objects, materials and living things (ELG). Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function (ELG). 	<ul style="list-style-type: none"> Record properties of objects. Group objects according to their properties. Apply to real-life context, e.g. explain the different materials of a bicycle and explain why it is a suitable material. 	<p>In Year 5 pupils will be taught to: Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>



Science Curriculum Map at STM



			<ul style="list-style-type: none">• distinguish between an object and the material from which it is made (NC Y1)• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock (NC Y1)• describe the simple physical properties of a variety of everyday materials (NC Y1)• compare and group together a variety of everyday materials on the basis of their simple• physical properties (NC Y1)	<ul style="list-style-type: none">• Explain through tests which materials are attracted to magnets and which ones are not.• Plan an investigation - which material is suitable for Paddington Bear's hat?		
Lent 2	Animals and their Needs (Y1 PKC)	B	<ul style="list-style-type: none">• Name and describe a variety of animals using scientific vocabulary• Know that animals can be grouped by their features e.g. whether they are amphibians or mammals• Know that animals can be grouped by what they eat e.g. herbivores, omnivores and carnivores• Know that there are wild and domestic animals. Domestic animals are animals that we keep as pets	<ul style="list-style-type: none">• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class (ELG)• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (NC Y1)• identify and name a variety of common animals that are carnivores, herbivores and omnivores (NC Y1)• describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) (NC Yr1)	<ul style="list-style-type: none">• They can identify and name some common animals and their offspring, e.g. Calf is the offspring of Cows.• Children grouping a range of amphibians and mammals.• Sorting animals into Venn diagrams distinguishing between carnivores, herbivores and omnivores.• Explain what a pet needs – design an information booklet.• Draw and label animals, e.g. fish.	<p>In Year 2 pupils will be taught to: Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival. Describe the importance for humans to exercise, eating the right amounts of different types of food, and hygiene.</p> <p>In Year 3 pupils will be taught to: Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>In Year 4 pupils will be taught to: Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>In Year 5 pupils will be taught to: Describe the changes as humans develop to old age.</p> <p>In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. describe the ways in which nutrients and water are transported within animals, including humans.</p>
Pentecost 1	Plants (Y1 PKC)	B	<ul style="list-style-type: none">• To name and describe the purpose of parts of a plant, and what• they need in order to grow.• To understand that plants spread their seeds to reproduce.• To understand that some trees are evergreen, and some are• deciduous.	<ul style="list-style-type: none">• ELG: make observations of animals and plants and explain why some things occur and talk about changes.• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.• Identify and describe the basic structure of a variety of common flowering plants, including trees.	<ul style="list-style-type: none">• Describe conditions where plants grow and conduct an experiment.• Draw and label parts of plants.• Describe how plants disperse their seed.• Draw and describe trees (e.g oak trees (deciduous) vs fir (evergreen)).• Real life situation – which parts of a plant do you eat?	<p>In Year 2 pupils will be taught to: Children should be taught to observe and describe how seeds and bulbs grow into mature plant. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>



Science Curriculum Map at STM



			<ul style="list-style-type: none">• To understand that plants are grown for food and to recognise• which parts of plants we eat.			
Pentecost 2	Seasons and Weather (Y1 Non-PKC)	P	<ul style="list-style-type: none">• We have four seasons; spring, summer, autumn and winter.• Our weather is warmer during the spring and summer and cooler during the autumn and winter.• To know the tools used to gather data about the weather• There are different types of cloud and that clouds indicate the weather we are about to experience• To recognise weather symbols used in weather forecasting and explain the importance of accurate forecasts• Meteorologists can study the weather and predict how it will change.• Some weather can be dangerous, for example, flooding and hurricanes.	<ul style="list-style-type: none">• Explore the natural world around them, making observations and drawing pictures of animals and plants (ELG).• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class (ELG).• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter (ELG).• observe changes across the 4 seasons (NC Y1)• observe and describe weather associated with the seasons and how day length varies (NC Y1)	<ul style="list-style-type: none">• Collecting and recording data to make tables and charts about the weather.• Make displays about what happens in the world around them, including day length as the seasons change.	



Science Curriculum Map at STM



Y1/2 Class						
Term	Unit:	D	Knowledge goals	Pupils should be taught to... (NC)	What it might look like in the classroom:	Later learning
Advent 1	The Human Body (Y1/2)	B	<ul style="list-style-type: none"> To identify, name, label and draw the basic parts of the human body (Y1). To identify and label parts of our body relating to our senses (Y1). To know senses help us to understand the world around us and keep safe (Y1) To know our bodies, including our muscles and bones, need exercise to stay healthy. To know our digestive system takes nutrients from food to help us stay healthy (Y2). To know keeping clean stops germs from spreading and keeps us healthy (Y2). 	<ul style="list-style-type: none"> identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense (NC Yr1) Notice that animals, including humans, have offspring which grow into adults (Yr2) find out about and describe the basic needs of animals, including humans, for survival (water, food and air) (Yr2) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Yr2) 	<ul style="list-style-type: none"> Describe why humans need food, air and water to survive. Discuss how we get hungry and thirsty Explain humans at different life stages Draw and label body parts Investigate how sound travels through ears to brain Identify each stage of the digestive system Experiment: explain what your body does when you eat food? Explain why skin/muscles/bones are important Write and discuss scientific discoveries Key scientists – Hellen Keller 	<p>In Year 2 pupils will be taught to: Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival. Describe the importance for humans to exercise, eating the right amounts of different types of food, and hygiene.</p> <p>In Year 3 pupils will be taught to: Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>In Year 4 pupils will be taught to: Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>In Year 5 pupils will be taught to: Describe the changes as humans develop to old age.</p> <p>In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. describe the ways in which nutrients and water are transported within animals, including humans.</p>
Advent 2	Taking Care of the Earth (Y1 non-PKC)	B	<ul style="list-style-type: none"> To know that there are natural and man-made resources. Some resources are renewable and some are non-renewable To know that logging means cutting down trees. To identify some of the ways in which the environment can be polluted and how we can reduce pollution. 	This unit is included in our curriculum in addition to the content of the National Curriculum.	<ul style="list-style-type: none"> What are the negative impacts of human activity. Explain are resources manufactured? Describe renewable and non-renewable resources. Watch how trees get cut down and make observational notes. Conduct an experiment on recycling. 	<p>In Year 4 pupils will be taught to: recognise that environments can change and that this can sometimes pose dangers to living things</p> <p>In Year 5 pupils will be taught to: Describe the life process of reproduction in some plants and animals</p>
Lent 1	Materials and Matter (Y2 non-PKC unit)	C	<ul style="list-style-type: none"> Materials have different properties (Y1 and Y2) Magnetism is a force we cannot see (Y1) Materials, including magnets, have different uses around the home and in everyday life (Y1) 	<ul style="list-style-type: none"> distinguish between an object and the material from which it is made (NC Y1) identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock (NC Y1) describe the simple physical properties of a variety of everyday materials (NC Y1) 	<ul style="list-style-type: none"> Can name an object, say what material it is made from, identify its properties and make a link between the properties and a particular use Can label a picture or diagram of an object made from different materials. For a given object can identify what properties a suitable material needs to 	<p>In Year 4 Pupils will be taught to: Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).</p>



Science Curriculum Map at STM



			<ul style="list-style-type: none"> The materials used around us have different properties solid, liquid and gases) (Y2) 	<ul style="list-style-type: none"> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (Y2). Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (Y2). 	<ul style="list-style-type: none"> have whilst changing the shape of an object can describe the action used Can use the words flexible and/or stretchy to describe materials that can be changed in shape and stiff and/or rigid for those that cannot Can recognise that a material may come in different forms which have different properties Compare the use of everyday materials in and around school with other places such as home, journey to school, visits etc. Identify and classify the uses of different materials and record their observations. Find out about people who developed new and useful materials. Identify and discuss why some materials are good for some things and not for others. 	<p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>In Year 5 pupils will be taught to: Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>
Lent 2	Animals and their habitats (Y1/2 PKC)	B	<ul style="list-style-type: none"> Name and describe a variety of animals using scientific vocabulary (Y1) I know that animals can be grouped by their features e.g. whether they are amphibians or mammals (Y1) I know that animals can be grouped by what they eat e.g. herbivores, omnivores and carnivores (Y1 and Y2) I know that there are wild and domestic animals. Domestic animals are animals that we keep as pets (Y2) 	<ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (NC Y1) Identify and name a variety of common animals that are carnivores, herbivores and omnivores (NC Y1) Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) (NC Y1) Differences between living, dead and never been alive (NC Y2) Identify that most living things live in habitats to which they are suited and describe (NC Y2) how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other (NC Y2) Identify and name a variety of plants and animals in their habitats, including microhabitats (Nc Y2) 	<ul style="list-style-type: none"> write a short description of several animals, including the type of animal e.g. mammal. Record a description of each group and some examples in books. E.g. Amphibians live in water and on land, they lay eggs underwater. Some amphibians are frogs, toads and newts. Grouping animals draw and label a rainforest and, separately, a desert. Which living things would be found in these habitats? Why are earthworms important to an underground habitat? 	<p>In Year 2 pupils will be taught to: Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival. Describe the importance for humans to exercise, eating the right amounts of different types of food, and hygiene.</p> <p>In Year 3 pupils will be taught to: Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>
Pentecost 1	Plants (Y1/2 PKC)	B	<ul style="list-style-type: none"> To name and describe the purpose of parts of a plant, and what they need in order to grow (Y1) To understand that plants spread their seeds to reproduce (Y1) To understand that some plants create bulbs that live underground (Y2) 	<ul style="list-style-type: none"> identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Nc Y1) identify and describe the basic structure of a variety of common flowering plants, including trees (NC Y1) observe and describe how seeds and bulbs grow into mature plants (NC Y2) 	<ul style="list-style-type: none"> Investigate what plants need to grow by putting cress seeds in different conditions. For example, some seeds on a damp paper towel in the window, and some in a dark cupboard, some in the window with no water at all, some in a pot of water, some in a fridge. Check every few days and observe and compare changes. Children can record their observations. 	<p>In Year 3 pupils will be taught to: Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. explore the requirements of plants for life and growth and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>



Science Curriculum Map at STM



			<ul style="list-style-type: none"> To understand that some trees are evergreen, and some are deciduous (Y1) To understand that plants are grown for food and to recognise which parts of plants we eat (Y2) 	<ul style="list-style-type: none"> find out and describe how plants need water, light and a suitable temperature to grow and stay healthy (NC Y2) 	<ul style="list-style-type: none"> Can describe how plants that they have grown from seeds and bulbs have developed over time Draw and label the parts of a plant. Complete a table recording the parts of a plant we eat Observing and recording, with accuracy, the growth of a variety of plants. Discussing how they change over time from a seed or bulb. Closely observe the same plants at different stages of growth. Setting up comparative tests to show that plants need light and water to stay healthy. 	
Pentecost 2	Seasons and Weather (Y1 PKC)	P	<ul style="list-style-type: none"> We have four seasons; spring, summer, autumn and winter. Our weather is warmer during the spring and summer and cooler during the autumn and winter. To know the tools used to gather data about the weather There are different types of cloud and that clouds indicate the weather we are about to experience To recognise weather symbols used in weather forecasting and explain the importance of accurate forecasts. Meteorologists can study the weather and predict how it will change. Some weather can be dangerous, for example, flooding and hurricanes. 	<ul style="list-style-type: none"> observe changes across the 4 seasons observe and describe weather associated with the seasons and how day length varies (NC Yr1) 	<ul style="list-style-type: none"> Describe features of each season Draw a diagram and write a description of a rain gauge, weather vane and thermometer. Use the template provided in the resources if required. Describe what you measured. Create a graph to show the data provided in the resources. What information can we find out from this graph? Once complete, discuss how the graph helps us to see how much rainfall there was and allows us to compare different days. Written description of cloud types describe the weather and also give advice for how to prepare. E.g. It is going to be hot and sunny in Liverpool today, make sure you've got your sun cream! Write a description of a hurricane. 	



Science Curriculum Map at STM



Y2 Class						
Term	Unit:	D	Knowledge goals	Pupils should be taught to... (NC)	What it might look like in the classroom:	Later learning
Advent 1	The Human Body	B	<ul style="list-style-type: none"> Our bodies, including our muscles and bones, need exercise to stay healthy. Our digestive system takes nutrients from food to help us stay healthy. Keeping clean stops germs from spreading and keeps us healthy. 	<ul style="list-style-type: none"> notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. 	<ul style="list-style-type: none"> What do animals and humans need to survive? Draw a picture/diagram and write an explanation. Assemble and label a skeleton made of paper/card from a template. Some children can go further and independently draw bones to make their skeleton. When the skeleton is assembled, children can draw on some muscles to show the bones and muscles working together. Label the digestive system, and then describe the role of each main organ in the system and why it is important. Label the following: mouth, oesophagus, stomach, intestines, anus. Complete a multi-sensory circuit Children to write about scientists and why their discoveries were important (did Edward Jenner and Louis Pasteur). 	<p>In Year 3 pupils will be taught to: Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>In Year 4 pupils will be taught to: Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>In Year 5 pupils will be taught to: Describe the changes as humans develop to old age.</p> <p>In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.</p>
Advent 2	Electricity	P	<ul style="list-style-type: none"> Identify electrical appliances Explain how to ensure we are using electricity safely Know how to make a simple circuit Identify electrical conductors and insulators. 	This unit is beyond the requirements of the National Curriculum for Year 2. It has been written and included in our partnership to teach some important background knowledge that will help children in Year 4, when electricity features again, to access curriculum content in greater depth.	<ul style="list-style-type: none"> Complete a table recording appliances/toys found at home or in the classroom that require electricity. Identify which uses a battery or mains electricity. Write 'top tips' for using electricity safely. create a circuit using batteries, wires, and bulbs. Once confident with the simple equipment, pupils can include switches and buzzers too. Pupils can then draw their circuit and write a set of instructions detailing how to create a circuit. These tasks can be split over two lessons to allow pupils time to grow in confidence when constructing a circuit. Children to plan and undertake the investigation. 	<p>In Year 4 pupils will be taught to: Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.</p>
Lent 1	Materials and Matter	C	<ul style="list-style-type: none"> The materials used around us have different properties. Solids have a definite shape, we can change the shape of some solids by bending and squashing. Liquids flow freely. 	<ul style="list-style-type: none"> identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 	<ul style="list-style-type: none"> Design an object for a purpose, e.g. design your ideal bed, what materials would you use and why? Who was George de Mestral and what did he invent? Written answer- children may like to include an annotated diagram of Velcro showing the tiny hooks and loops. 	<p>In Year 4 Pupils will be taught to: Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).</p>



Science Curriculum Map at STM



					<ul style="list-style-type: none"> What is a microscope? Children can answer the question and then draw something a scientist might see under a microscope. You can either choose one specific material to draw, e.g. wood, or let children choose from the images you shared. Explore changing the shape of the solid objects. Which objects can be squashed, bent, twisted or stretched? Explain that the ice is solid water, it has been frozen which stops the atoms in the water moving around freely. Children to look closely at the ice cubes and discuss what they notice. T 	<p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>In Year 5 pupils will be taught to: Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>
Lent 2	Living things in their environment	B	<ul style="list-style-type: none"> I can name and identify a number of plants and animals, and their habitats I understand that habitats provide for the basic needs of the plants and animals that live there I understand that animals and plants are well suited to their habitats 	<ul style="list-style-type: none"> Explore and compare the differences between living, dead and never been alive identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other identify and name a variety of plants and animals in their habitats, including microhabitats 	<ul style="list-style-type: none"> Sort and classify things according to whether they are living, dead or were never alive. What habitats are there around our school? If possible, go outside and find insects or pondlife in microhabitats. Observe different plant and animal life in various microhabitats. Draw what they found in their microhabitat. In class pupils to sort pictures of animals into different habitats. Compare and contrast the different habitats. Pupils can write lists of plants and animals that live in different habitats. draw and label a rainforest and, separately, a desert. Describe an underground habitat. How does an underground habitat provide food and shelter for living things? create food chains 	<p>In Year 4 Pupils will be taught to: To recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>In Year 5 pupils will be taught to: To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.</p> <p>In Year 6 pupils will be taught to: To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. give reasons for classifying plants and animals based on specific characteristics.</p>
Pentecost 1	Plants	B	<ul style="list-style-type: none"> To be able to observe and describe how seeds and bulbs grow into mature plants To find out and describe how plants need water, light and a suitable temperature to stay healthy. 	<ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow to mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. 	<ul style="list-style-type: none"> Draw a label plants and leaves Draw and label a diagram of a seed and seedling, and a bulb and a sprouting bulb. Where does our food come from? This task could be completed as a written answer, or as a cartoon strip. Observing and recording, with accuracy, the growth of a variety of plants. 	<p>In Year 3 pupils will be taught to: Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. explore the requirements of plants for life and growth and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>



Science Curriculum Map at STM



					<ul style="list-style-type: none"> • Discussing how they change over time from a seed or bulb. Closely observe the same plants at different stages of growth. • Setting up comparative tests to show that plants need light and water to stay healthy. 	
Pentecost 2	Astronomy	P	<ul style="list-style-type: none"> • To know about the planets in our solar system. • To know that Earth travels around the sun. • To know that the moon orbits the earth. • To be able to describe and name some constellations. • To know that scientists explore space. 	<ul style="list-style-type: none"> • This unit has been written in addition to the National Curriculum content in Science for Year 2. It has been included to give pupils some prior knowledge which will be useful when they study astronomy again in Year 5. 	<ul style="list-style-type: none"> • Draw a diagram of the Solar System and label the planets. • Draw a diagram to show Earth's orbit around the sun. This is quite challenging conceptually, so model again if necessary. • Draw a simple diagram of different phases of the moon. • What is a constellation? Draw a diagram to help you answer the question. • : What is space exploration? Give examples of the ISS and Perseverance in your answer. 	<p>In Year 5 pupils will be taught to: Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>



Science Curriculum Map at STM



Y3 Class						
Term	Unit:	D	Knowledge goals	Pupils should be taught to... (NC)	What it might look like in the classroom:	Later learning
Advent 1	The Human Body	B	<ul style="list-style-type: none"> Our body contains different systems that enable us to grow, move and respond to the world around us. Our digestive system breaks down food into energy and nutrients. The brain sends messages around our bodies through our nervous system The skeletal system support and protects our bodies The muscular system enables us to move our bodies 	<ul style="list-style-type: none"> identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	<ul style="list-style-type: none"> Sort muscles into two groups: voluntary and involuntary. children draw around each other's bodies and then label as many bones as they can. Give children a diagram to support. Write a list of what happens in our nervous system when we see a ball and want to kick it. What do our eyes see? What does our brain do? What do our nerves do? What does our leg do? What does our foot do? Where do the messages travel to? How does our body prepare to eat? Draw a diagram and explain. How does our digestive system work? Children may want to draw a diagram of the human body to support their answer. 	<p>In Year 4 pupils will be taught to: Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>In Year 5 pupils will be taught to: Describe the changes as humans develop to old age.</p> <p>In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.</p>
Advent 2	Forces and Magnets	P	<ul style="list-style-type: none"> Gravity is a force that causes things to fall to the ground when dropped. Friction is a force between two objects that slows down the moving object. Magnets have two poles and like poles repel whereas unlike poles attract. Magnets have different strengths. 	<ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between 2 objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing. 	<ul style="list-style-type: none"> show you what happens when they use a little force on the toy car. What happens when we use a stronger force? Then, record in books: What is a force? Write an explanation and draw a diagram. Explain investigation: Investigate how things move on different surfaces. Explain we will be using a toy car, a stopwatch and a ramp, we will time how long the car takes to reach the bottom of the ramp. Investigate and see if predictions are right using magnets. Which items in the room are magnetic? Record your observations. Compare the strength of bar magnets: use paper clips and various bar magnets. Draw a diagram showing a magnet, label its poles and sketch to show where the magnetic field is. select a suitable way to investigate the strength of the magnetic force e.g. Put a paper clip on a piece of paper, move the bar magnet towards it, measure with a ruler how near it gets before paperclip moves. Or hold a bar magnet up- see how many paperclips it can support. 	<p>In Year 5 pupils will be taught to: Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>
Lent 1	Light	P	<ul style="list-style-type: none"> We need light in order to see things and that dark is the absence of light 	<ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light 	<ul style="list-style-type: none"> Why do the following things need light; plants, people, animals? Children can 	<p>In Year 6 pupils will be taught to: Recognise that light appears to travel in straight lines. Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect</p>



Science Curriculum Map at STM



			<ul style="list-style-type: none"> Light is essential for life on Earth. Light is reflected from some surfaces, such as mirrors Sometimes light from the sun can be dangerous and we can protect ourselves from this. 	<ul style="list-style-type: none"> Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and that there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is blocked by an opaque object 	<p>write their answers and draw diagrams to show what they know.</p> <ul style="list-style-type: none"> Test out a range of materials, using a torch. Record whether they are transparent, opaque. Predict then test. Children to use a small plane mirror to make a mirror image of their written name, copy it carefully. Complete investigation. Children to stand on the same spot at intervals throughout the day and draw their shadows each time. They may choose to measure the distance between each shadow (or a point of their body in the shadow) Looking for patterns in what happens to shadows when the light source moves or when the distance in the light source changes. 	<p>light into the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>
Lent 2	Cycles in Nature	B	<ul style="list-style-type: none"> Know that our natural environment changes as the seasons change. Understand how plants can change through the seasons. Know that some animals migrate and can give examples Recognise the different stages in the life cycle of a frog. 	<ul style="list-style-type: none"> This unit is included in our curriculum in addition to the content of the National Curriculum, however there are links to Year 3 NC objectives for Plants. identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers (NC Y3) explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal (NC Y3) 	<ul style="list-style-type: none"> Using large paper, draw a diagram to show the seasonal cycle. Explain to children that they should include information about; the tilt of the earth towards/away from the sun, plants, animals, temperature, sunlight. Children can draw, label and annotate the life cycle of a plant in their books. Give children a table with some key information about migration patterns (example in resources at end of this unit). Give children a blank world map to annotate. Draw a migration path for a chosen animal. Describe the migration; where does the animal travel, how far is the journey? Draw the stages within the life cycle of a frog 	<p>In Year 5 pupils will be taught to: Describe the life process of reproduction in some plants and animals (seed dispersal, pollination and seed formation).</p> <p>In Year 6 pupils will be taught to: Give reasons for classifying plants and animals based on specific characteristics. 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.</p>
Pentecost 1	Plants	B	<ul style="list-style-type: none"> Flowering plants are living things that reproduce Flowering plants all have roots, a stem or trunk, leaves and flowers but not all flowering plants look the same. Flowering plants create seeds. Flowering plants can only produce seeds if pollen is transferred. Conditions, including moisture and warmth, must be right for a seed to germinate and grow into a new plant. 	<ul style="list-style-type: none"> identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant investigate the way in which water is transported within plants 	<ul style="list-style-type: none"> Children study various flowering plants Draw an annotated diagram of a sunflower and a cactus. What do they need to thrive? Experiment (ideally one for each table so children can observe closely) with stems of celery sitting in black or red ink and water. What is pollination? Written answer-children can also draw a diagram showing the process of pollination and label it. Record information about seed dispersal into a table and include labelled diagrams. 	<p>In Year 5 pupils will be taught to: Describe the life process of reproduction in some plants and animals (seed dispersal, pollination and seed formation).</p> <p>In Year 6 pupils will be taught to: Give reasons for classifying plants and animals based on specific characteristics. 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.</p>



Science Curriculum Map at STM



Pentecost 2	Rocks (Y3 Non-PKC unit)	C	<ul style="list-style-type: none"> Rocks are classified by how they are formed: sedimentary, igneous and metamorphic. Rocks can also be classified by their properties such as whether they are hard or whether they are permeable Fossils are formed over a long period of time from the remains of plants and animals that have died. Soil is a mixture of small pieces of rock with dead organic matter. 	<ul style="list-style-type: none"> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter. 	<ul style="list-style-type: none"> Observe rocks, including those used in buildings and gravestones, exploring how and why they may have changed over time. Use microscopes and hand lens' to identify and classify rocks. Research and discuss the different types of living things whose fossils are found in sedimentary rocks. Identify similarities and differences between different types of soils. Investigate what happens when rocks are rubbed together and the changes that happen when they are in water. 	<p>In Year 6 pupils will be taught to: Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p>
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Science Curriculum Map at STM



Y3/4 Class						
Term	Unit:	D	Knowledge goals	Pupils should be taught to... (NC)	What it might look like in the classroom:	Later learning
Advent 1	The Human Body (Y4 PKC)	B	<ul style="list-style-type: none"> Our body contains different systems that enable us to grow, move and respond to the world around us (Y3) Our digestive system breaks down food into energy and nutrients (Y3) The brain sends messages around our bodies through our nervous system (Y3) All living things are made up of cells, too small to be seen without a microscope. Cells make up tissues. Tissues make up organs. Organs work in systems. Scientist use a powerful magnifying glass, called a microscope, to look at cells (Y4) Signals are sent from the brain to the salivary glands and then to the stomach. You have different teeth that have different jobs (Y4) The stomach stirs up the food and mixes it with acid, The intestines move the food around. The small intestine is a long coiled up tube that winds around inside your tummy. Whilst in the intestine, the nutrients are absorbed by the blood (Y4) To know that they need a balanced meal to be healthy and get all the nutrients they need. Understanding the parts of the food pyramid (Y4) To know the essential vitamins and minerals needed in our body (Y4) 	<ul style="list-style-type: none"> identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat (NC Y3) identify that humans and some other animals have skeletons and muscles for support, protection and movement. (NC Y3) Describe the simple functions of the basic parts of the digestive system in humans (NC Y4) Identify the different types of teeth in humans and their simple functions (NC Y4) 	<ul style="list-style-type: none"> Sketch a diagram about nutrition and explain it. Label a diagram of a tooth, and label the teeth in a diagram of a mouth. Explain coke is very sugary, lemon juice is very acidic and water is quite neutral. Label the beakers and observe again every day for a week. Discuss the results. Describe what happens when we eat food; What do the various parts of our digestive system do? What gets absorbed? Where does waste go? Label digestive system/ practically make a digestive system. design a healthy dinner plate. Label the foods and identify which food group they belong to. Complete a table identify a part of body that needs a particular vitamin or mineral and which food group the vitamin/mineral is in, or draw an outline of a human body and label it with vitamins and minerals that are useful for our bodies. 	<p>In Year 4 pupils will be taught to: Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>In Year 5 pupils will be taught to: Describe the changes as humans develop to old age.</p> <p>In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.</p>
Advent 2	The Water Cycle (Y4 PKC)	C	<ul style="list-style-type: none"> When water evaporates, it becomes water vapor. Condensation is when water vapour turns back into liquid. Not all water evaporates and that some of this will soak into 	<ul style="list-style-type: none"> compare and group materials together, according to whether they are solids, liquids or gases NC Y4) observe that some materials change state when they are heated or cooled, and measure or research the 	<ul style="list-style-type: none"> observe the ice closely and check the temperature in the beaker at 5-minute intervals and record their findings (controlling variables etc) Draw a simple diagram showing water evaporating, write a short description of what is happening to the water. 	<p>In Year 5 pupils will be taught to: Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. use</p>



Science Curriculum Map at STM



			<p>the ground and become groundwater.</p> <ul style="list-style-type: none"> High in the sky the air is cooler and turns vapour back into water droplets. There is always water vapour in the air and the temperature changes its appearance. Precipitation returns water to the surface of the earth within the water cycle. 	<p>temperature at which this happens in degrees Celsius (°C) NC Y4)</p> <ul style="list-style-type: none"> identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature (NC Y4) 	<ul style="list-style-type: none"> Describe/show the process of condensation. What is precipitation? Draw a diagram to help you explain your answer. How does water change state within the water cycle? – write-up/experiment etc. 	<p>knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>
Lent 1	Investigations Forces and Magnets (Y3 Non-PKC unit)	P	<ul style="list-style-type: none"> Gravity is a force that causes things to fall to the ground when dropped. Friction is a force between two objects that slows down the moving object. Magnets have two poles and like poles repel whereas unlike poles attract. Magnets have different strengths. 	<ul style="list-style-type: none"> Compare how things move on different surfaces (NC Y3) Notice that some forces need contact between two objects, but magnetic forces can act at a distance (NC Y3) Observe how magnets attract or repel each other and attract some materials and not others (NC Y3) 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 (NC Y3) Describe magnets as having two poles (NC Y3) Predict whether two magnets will attract or repel each other, depending on which poles are facing (NC Y3) 	<ul style="list-style-type: none"> Compare how different things move and group them accordingly. Raise questions and carry out tests to find out how far things move on different surfaces. Gather and record data to answer their questions. Explore the strength of different magnets and find a fair way to compare them. Sorting materials into magnetic and non-magnetic. Looking for patterns in the way magnets behave in relation to each other and what might affect this, such as the size or which poles face each other. Identify how these properties make magnets useful. 	<p>In Year 5 pupils will be taught to: Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>
Lent 2	Classification (Y4 PKC)	B	<ul style="list-style-type: none"> To understand that plants and animals can be classified according to characteristics Scientists classify animals into two groups: vertebrates and invertebrates Vertebrates have a backbone or spinal column, whereas an invertebrates does not Animals can be classified by whether they are cold-blooded or warm-blooded 	<ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways (NC Y4) Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (NC Y4) 	<ul style="list-style-type: none"> Create a table that sorts animals by vertebrates and invertebrates. Discuss how best to do this. Sketch a fish and an amphibian and label key parts. Write a short paragraph for each sketch explaining features of these vertebrates. Complete a table with information about birds, reptiles and mammals. Include examples of each and their features. write a fact file about invertebrates. Children can include information about insects, arachnids and molluscs, their similarities (no backbone) and differences. Include a labelled diagram. Classify animal and plants. 	<p>In Year 5 pupils will be taught: To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.</p> <p>In Year 6 pupils will be taught: To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. give reasons for classifying plants and animals based on specific characteristics.</p>
Pentecost 1	Plants (Y3/4 PKC)	B	<ul style="list-style-type: none"> flowering plants are living things that re-produce Flowering plants all have roots, a stem or trunk, leaves and flowers but not all flowering plants look the same. 	<ul style="list-style-type: none"> identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers (NC Y3) explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) 	<ul style="list-style-type: none"> Study a variety of flowering plants and select one plant or flower to sketch and annotate. Set up an experiment (ideally one for each table so children can observe closely) with stems of celery sitting in 	<p>In Year 5 pupils will be taught: Describe the life process of reproduction in some plants and animals (seed dispersal, pollination and seed formation).</p> <p>In Year 6 pupils will be taught: Give reasons for classifying plants and animals based on specific characteristics.</p>



Science Curriculum Map at STM



			<ul style="list-style-type: none"> Flowering plants create seeds. Flowering plants can only produce seeds if pollen is transferred. Conditions, including moisture and warmth, must be right for a seed to germinate and grow into a new plant. Plants can be classified by flowering and non-flowering 	<p>and how they vary from plant to plant (NC Y3)</p> <ul style="list-style-type: none"> investigate the way in which water is transported within plants (NC Y3) recognise that living things can be grouped in a variety of ways (NC Y4) explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (NCY4) 	<p>black or red ink (felt-tip pens) and water. This also works well with carnations.</p> <ul style="list-style-type: none"> What is pollination? Written answer. Record information about seed dispersal into a simple table and include labelled diagrams. 	<p>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.</p>
Pentecost 2	Rocks (Y3 PKC Unit)	C	<ul style="list-style-type: none"> Rocks are classified by how they are formed: sedimentary, igneous and metamorphic. Rocks can also be classified by their properties such as whether they are hard or whether they are permeable Fossils are formed over a long period of time from the remains of plants and animals that have died. Soil is a mixture of small pieces of rock with dead organic matter. 	<ul style="list-style-type: none"> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter. 	<ul style="list-style-type: none"> Sort the rock samples you have according to their properties. If you have a rock sample set, ensure children know the names of the rocks. Record some rocks and a description of each in a table. Draw a diagram and write a short explanation to show how each rock type forms. If you have microscopes or magnifying glasses, encourage children to look closely at the different rocks. Discuss which they think will be permeable or impermeable. Draw and label a diagram to show that fossils can be found in sedimentary rock. B- Who was Mary Anning? provide soil samples from two or more locations e.g. soil from a flower bed, soil from a wooded area, soil containing many rocks. Use a sieve, and water and tweezers. If you have microscopes and/or magnifying glasses, make these available to children. Observe rocks, including those used in buildings and gravestones, exploring how and why they may have changed over time. Use microscopes and hand lens' to identify and classify rocks. 	<p>In Year 6 pupils will be taught to: Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p>



Science Curriculum Map at STM



Y4/5 Class						
Term	Unit:	D	Knowledge goals	Pupils should be taught to... (NC)	What it might look like in the classroom:	Later learning
Advent 1	The Human Body (Y5 PKC Unit) X3 lessons	B	<ul style="list-style-type: none"> Humans undergo many changes as they develop from conception to old age. As humans age, they begin to slow and sometimes problems like heart disease or arthritis occur. 	<ul style="list-style-type: none"> Describe the changes as humans develop to old age (NC Y5) Relates to RHE Module on human changes (Y4 and Y5) 	<ul style="list-style-type: none"> Draw and annotate a timeline to show how humans change over time. How do humans change from adulthood to old age? Written explanation. How does the endocrine system work? What's its role in human development? 	In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.
Advent 2	Electricity (Y4 PKC Unit)	P	<ul style="list-style-type: none"> Electricity is an energy that we can store or use to make things work. An electrical circuit is a wire loop that allows electricity to travel around it. Materials that allow electricity to pass through them are conductors. 	<ul style="list-style-type: none"> identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors (NC Y4) 	<ul style="list-style-type: none"> Explore which appliances use electricity in our classroom? Which use electricity at home? How can we use electricity safely in the classroom? Written answer in books. create a circuit using batteries, wires, and bulbs. Then, introduce the simple symbols on the Knowledge Organiser. Model how to draw an electrical circuit where the electricity can flow around the circuit. Explore using a switch within a circuit. Then draw a circuit containing a switch, both open and closed. give children a short biography of Edison and Latimer to read. Children to undertake the investigation. Children should record and share their findings, did their investigation work? 	In Year 6 pupils will be taught to: Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram.
Lent 1	Sound (Y4 PKC unit)	P	<ul style="list-style-type: none"> Sound is caused by a back and forth movement called vibration. Sound waves move out from a vibrating object in all directions. In warm air, sound travels at about 770 miles per hour (340 metres per second). Sound becomes quieter further from the source. Loud sounds have larger vibrations. Quiet sounds have smaller vibrations. High pitched sounds have faster vibrations. Low pitched sounds have slower vibrations. The larynx is in the throat and the muscles vibrate the vocal cords. 	<ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it find patterns between the volume of a sound and the strength of the vibrations that produced it 	<ul style="list-style-type: none"> Ensure children understand that the sound travels along the string (solid). Complete a diagram and explanation in books. Explain why sounds are fainter further away (the energy from the vibration is spread over a larger area the further from the source). Write an explanation about the speed of sound: How fast does speed travel? Does sound travel slower or faster than light? How do you know? Explain why, using the word vibration. Some children can take accurate measurements and try to discover if there is an exact relationship between length and pitch (explain that one note higher is the same difference in pitch every time). Draw a diagram showing what happens when you make noises with your voice. Explain how humans hear. Draw a diagram and label. 	Key Stage 3 Curriculum



Science Curriculum Map at STM



Lent 2	The Water Cycle (Y4 Non-PKC unit)	C	<ul style="list-style-type: none"> When water evaporates, it becomes water vapor. Condensation is when water vapour turns back into liquid. Not all water evaporates and that some of this will soak into the ground and become groundwater. High in the sky the air is cooler and turns vapour back into water droplets. There is always water vapour in the air and the temperature changes its appearance. Precipitation returns water to the surface of the earth within the water cycle. 	<ul style="list-style-type: none"> compare and group materials together, according to whether they are solids, liquids or gases (NC Y4) 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) (NC Y4) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature (NC Y4) 	<ul style="list-style-type: none"> Can create a concept map, including arrows linking the key vocabulary Can name properties of solids, liquids and gases Can give everyday examples of melting and freezing Can give everyday examples of evaporation and condensation Describe the water cycle Grouping and classifying a variety of different materials. Explore the effects of temperature on substances such as butter, cream and chocolate. Research the temperature at which a material changes state, for example, iron melting or oxygen condensing into a liquid. Observe and record evaporation. 	<p>In Year 5 pupils will be taught to: Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>
Pentecost 1	Forces (Y5 PKC unit) (x3 lessons)	P	<ul style="list-style-type: none"> Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Air resistance, water resistance and friction, act between moving surfaces Simple machines, including levers, pulleys and gears, allow a smaller force to have a greater effect 	<ul style="list-style-type: none"> compare how things move on different surfaces (NC Y3 – if gaps are present in knowledge) notice that some forces need contact between 2 objects, but magnetic forces can act at a distance (NC Y3 – if gaps are present in knowledge) observe how magnets attract or repel each other and attract some materials and not others (NC Y3 – if gaps are present in knowledge) 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 (NC Y3 – if gaps are present in knowledge) describe magnets as having 2 poles (NC Y3 – if gaps are present in knowledge) predict whether 2 magnets will attract or repel each other, depending on which poles are facing (NC Y3 – if gaps are present in knowledge) Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object (NC Y5) Identify the effects of air resistance, water resistance and friction, that act between moving surfaces (NC Y5) Recognise that some mechanisms, including levers, pulleys and gears, allow 	<ul style="list-style-type: none"> Draw diagrams to show each of the four effects (increase speed, decrease speed, change direction and change shape) that a force can have upon an object. Draw diagrams to explain friction, air resistance and water resistance. Plan the investigation you have chosen. Carry out some preliminary results. Then finalise the results table. To be continued Draw a bar graph to show your results. Write down what you have found out. allow children to use pulleys, levers and gears. Alternatively you could look at making a pulley or lever. The main point of this lesson is to show children that simple machines help us to increase the force we apply to an object. If you have access to newton metres, children could measure the force they apply without using the simple machine, and then with, perhaps to lift a heavy object. Draw diagrams of simple machines at work. 	<p>Key Stage Three Curriculum</p>



Science Curriculum Map at STM



				a smaller force to have a greater effect (NC Y5).		
	Astronomy (Y5 non-PKC unit) X3 lessons	P	<ul style="list-style-type: none"> To know the order of scale: planet, sun, solar system, galaxy, universe. To know that astronomers believe the universe started 14 billion years ago in a big bang and that it is still expanding. To know that gravity is a force between all objects, and the force is bigger if the object is bigger. We can only 'feel' gravity between us and the Earth. <p>To understand the reason that we see the phases of the moon</p>	<ul style="list-style-type: none"> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. 	<ul style="list-style-type: none"> Can show, using diagrams, the movement of the Earth and Moon Can explain the movement of the Earth and Moon Can show using diagrams the rotation of the Earth and how this causes day and night Can explain what causes day and night 	<p>In Year 7 pupils will be taught: The composition of the Earth and the structure of the Earth. The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. Earth as a source of limited resources and the efficacy of recycling. The carbon cycle and the composition of the atmosphere. The production of carbon dioxide by human activity and the impact on climate. Gravity forces between the earth and the moon and the earth and the sun. Sun as a star, and stars in other galaxies. Seasons and the earth's tilt, day length. Light years.</p>
Pentecost 2	Ecology (Y4 PKC unit)	B	<ul style="list-style-type: none"> Know that living things depend on each other within a habitat Know the 7 life processes which living things have in common: Movement, Reproduction, Sensitivity, Growth, Respiration, Excretion, Nutrition Know the three groups of living things which the cycle of nature depends on: producers, consumers and de-composers Recognise that environments can change and that this can sometimes pose dangers to living things 	<ul style="list-style-type: none"> recognise that environments can change and that this can sometimes pose dangers to living things (NC Y4) construct and interpret a variety of food chains, identifying producers, predators and prey (NC Y4) describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird (NC Y5) Describe the life process of reproduction in some plants and animals (NC Y5) 	<ul style="list-style-type: none"> Using non-fiction books and the internet, research different habitats. Record information you find. Provide children with pictures to make a food chain. Label the name of the organism (e.g. sunflower), what role they play (e.g. producer) and where they get their energy from. Then construct some food chains of your own. Explain how living things depend on each other within an ecosystem. This could be a written task, or pupils could create a visual response and record a video of them explaining it. Give specific examples such as deforestation or introduction of a species. How can air pollution affect ecosystems? 	<p>In Year 5 pupils will be taught to: To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.</p> <p>In Year 6 pupils will be taught to: To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.</p>



Science Curriculum Map at STM



Y5 Class						
Term	Unit:	D	Knowledge goals	Pupils should be taught to... (NC)	What it might look like in the classroom:	Later learning
Advent 1	The Human Body	B	<ul style="list-style-type: none"> Humans undergo many changes as they develop from conception to old age. As humans age, they begin to slow and sometimes problems like heart disease or arthritis occur. 	<ul style="list-style-type: none"> Describe the changes as humans develop to old age Relates to RHE Module on human changes 	<ul style="list-style-type: none"> Draw and annotate a timeline to show how humans change over time. How do humans change from adulthood to old age? Written explanation. How does the endocrine system work? What's its role in human development? 	In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.
Advent 2	Materials	C	<ul style="list-style-type: none"> Properties can be grouped on the basis of their properties. When a solute dissolves in a solvent to form a solution, the process is reversible. 	<ul style="list-style-type: none"> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic Demonstrate that dissolving, mixing and changes of state are reversible changes 	<ul style="list-style-type: none"> Draw an electric cable and label the two materials. Explain which properties make these materials suitable. Create a table detailing material, properties and their uses. Plan what equipment they need and how they will ensure all variables stay the same other than the materials being tested. Ask what they could do to check the accuracy of their results (repeat experiment!). Record results. Encourage them to look at the graphing options, choosing what they think will demonstrate their results the most effectively (line graphs all on same graph for comparison) Carry out the investigation. Record results in the table provided. Group the materials into categories: those which dissolve in water, those which don't dissolve. How have they conducted a fair test? What might happen if the temp of the water is varied? Record their results in a suitable graph. Look at the evaporating dishes from last lesson. Have any solids appeared? How could we show the water hasn't disappeared? Collect beakers of warm water, cling film over the top, put ice in centre of cling film. What do you expect to see? 	In Year 7 pupils will be taught: The particulate nature of matter. Atoms, elements and compounds. Pure and impure substances. Chemical reactions. Periodic table. Materials such as carbon, ceramics, polymers and composites.
Lent 1	Forces (non-PKC unit)	P	<ul style="list-style-type: none"> Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Air resistance, water resistance and friction, act between moving surfaces 	<ul style="list-style-type: none"> compare how things move on different surfaces (NC Y3 – if gaps are present in knowledge) notice that some forces need contact between 2 objects, but magnetic forces can act at a distance (NC Y3 – if gaps are present in knowledge) 	<ul style="list-style-type: none"> Can demonstrate the effect of gravity acting on an unsupported object Can give examples of friction, water resistance and air resistance Can give examples of when it is beneficial to have high or low friction, water resistance and air resistance Can demonstrate how pulleys, levers and gears work 	Key Stage Three Curriculum



Science Curriculum Map at STM



			<ul style="list-style-type: none"> Simple machines, including levers, pulleys and gears, allow a smaller force to have a greater effect 	<ul style="list-style-type: none"> observe how magnets attract or repel each other and attract some materials and not others (NC Y3 – if gaps are present in knowledge) 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 (NC Y3 – if gaps are present in knowledge) describe magnets as having 2 poles (NC Y3 – if gaps are present in knowledge) predict whether 2 magnets will attract or repel each other, depending on which poles are facing (NC Y3 – if gaps are present in knowledge) Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object (NC Y5) Identify the effects of air resistance, water resistance and friction, that act between moving surfaces (NC Y5) Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect (NC Y5). 		
Lent 2	Living things	B	<ul style="list-style-type: none"> There are many differences between the life cycles of mammals, amphibians, insects and birds Plants grow and reproduce in a continuing life cycle 	<ul style="list-style-type: none"> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the life process of reproduction in some plants and animals 	<ul style="list-style-type: none"> Explain the life cycle of an oak and a squirrel using drawings and explanations. Draw and label the life cycle of a newt and a chimpanzee. Draw and label the life cycle of a bumblebee and a cuckoo (Provide some images if drawing will be too time consuming) Write an explanation for each life cycle. To dissect a flower, draw and label the parts of a flower involved in sexual reproduction Research David Attenborough and/or Jane Goodall. Write a short biography of both/one. 	<p>In Year 6 pupils will be taught to: To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. give reasons for classifying plants and animals based on specific characteristics.</p>
	Sound (Y4 non-PKC unit) X3 lessons	P	<ul style="list-style-type: none"> Sound is caused by a back and forth movement called vibration. Sound waves move out from a vibrating object in all directions. In warm air, sound travels at about 770 miles per hour (340 metres per second). 	<ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it 	<ul style="list-style-type: none"> Can name sound sources and state that sounds are produced by the vibration of the object Can state that sounds travel through different mediums such as air, water, metal Can give examples to demonstrate how the pitch of a sound are linked to the features of the object that produced it 	Key Stage Three Curriculum



Science Curriculum Map at STM



			<ul style="list-style-type: none"> • Sound becomes quieter further from the source. • Loud sounds have larger vibrations. • Quiet sounds have smaller vibrations. • High pitched sounds have faster vibrations. • Low pitched sounds have slower vibrations. <p>The larynx is in the throat and the muscles vibrate the vocal cords.</p>	<p>find patterns between the volume of a sound and the strength of the vibrations that produced it</p>	<ul style="list-style-type: none"> • Can give examples of how to change the volume of a sound e.g. increase the size of vibrations by hitting or blowing harder <p>Can give examples to demonstrate that sounds get fainter as the distance from the sound source increases</p>	
Pentecost 1 and 2	Astronomy	P	<ul style="list-style-type: none"> • To know the order of scale: planet, sun, solar system, galaxy, universe. • To know that astronomers believe the universe started 14 billion years ago in a big bang and that it is still expanding. • To know that gravity is a force between all objects, and the force is bigger if the object is bigger. We can only 'feel' gravity between us and the Earth. • To know the planets of the solar system • To understand the reason that we see the phases of the moon • To understand that the Solar System is just a small part of our universe 	<ul style="list-style-type: none"> • Describe the movement of the Earth and other planets relative to the sun in the solar system • Describe the movement of the Moon relative to the Earth • Describe the Sun, Earth and Moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. 	<ul style="list-style-type: none"> • Explain what happened at the Big Bang and draw a diagram of galaxies moving apart. Use the image of the balloon from the Talk Task to help you. • What is gravity? Why does the Moon orbit the Earth and the Earth orbit the Sun? • Draw and label a diagram of The Solar System, with the planets in the correct order. Add some features of each planet to the diagram. • Draw and label the eight distinct stages of the moon, the lunar phases. • Create a diagram of the different scales of the universe. From stars, to galaxies, to galaxy clusters, to superclusters. Write a definition for each one. 	<p>In Year 7 pupils will be taught:</p> <p>The composition of the Earth and the structure of the Earth. The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. Earth as a source of limited resources and the efficacy of recycling. The carbon cycle and the composition of the atmosphere. The production of carbon dioxide by human activity and the impact on climate. Gravity forces between the earth and the moon and the earth and the sun. Sun as a star, and stars in other galaxies. Seasons and the earth's tilt, day length. Light years.</p>



Science Curriculum Map at STM



Y6 Class						
Term	Unit:	D	Knowledge goals	Pupils should be taught to... (NC)	What it might look like in the classroom:	Later learning
Advent 1	The Human Body	B	<ul style="list-style-type: none"> The heart and blood vessels make up the circulatory system. The heart has four chambers. It pumps blood depleted of oxygen to the lungs, and pumps oxygenated blood around the body. Lifestyle choices can impact on our circulatory system including the health of our heart. 	<ul style="list-style-type: none"> Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Describe the ways in which nutrients and water are transported within animals, including humans. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function 	<ul style="list-style-type: none"> label and annotate the parts of the hearts, children to colour the right side blue and left side red. Children to label and annotate the parts of a vein, artery and capillary, and write sentences about each children count their pulse rates (you will have to teach them to find their pulse on their wrist, neck or on others). Make predictions and test. Children to plan and conduct their experiment, use of prompt sheet to help them plan. How will they record their results? 	In Year 7 pupils will be taught: Cells and organisation. The skeletal and muscular system. Nutrition and digestion. Gas exchange stems. Reproduction and health.
Advent 2	Light	P	<ul style="list-style-type: none"> Light travels in straight lines Shadows are always the same shape as the objects that made them The size of shadows can change, but the outline shape is always the same as the original object Light can reflect from a surface and change the duration of travel 	<ul style="list-style-type: none"> Recognise that light appears to travel in straight lines Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes 	<ul style="list-style-type: none"> What is light? Include a diagram of a light source showing how light travels to our eyes. Turn lights off have pupils look at pupils in mirror, turn the lights on, what do you notice? What happens to your pupil? Use torches and objects from the classroom to test this hypothesis. Ask children to record their findings, but allow them to decide how best to do this. Children can write an explanation including diagrams to show what they found out. to draw and label diagrams of a prism and describe what is happening. Make a periscope. 	KS3 Curriculum
Lent 1 and 2	Electricity	P	<ul style="list-style-type: none"> Electricity can flow from one place to another, this is called electrical current. We can control electricity by causing it to flow in a circuit. Making a gap in a circuit prevents electricity from flowing 	<ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Compare and give reasons for the variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off positions of switches Use recognized symbols when representing a simple circuit in a diagram 	<ul style="list-style-type: none"> Create simple series circuits, adding components as necessary. Explore adding batteries to a series circuit containing lamps and or buzzers. Draw a diagram to show the circuit made. Annotate the diagram to explain what happened. Children to make parallel circuits and add/remove switches to see how we can turn bulbs on and off in different sections of the circuit. Draw diagrams in science books to show how switches can be used in parallel circuits. Design a toy that uses electricity 	In Year 7 pupils will be taught: Electrical currents, measured in amperes, in circuits, series and parallel circuits. Currents add where branches meet and current as a flow of charge. Measuring in volts. Battery and bulb rating, resistance, measured in ohms. Differences in resistance. Static electricity- the separation of positive or negative charges when objects are rubbed together. Force between charged objects. Electrical field and forces acting across the space between objects not in contact.
Pentecost 1	Classification	B	<ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including 	<ul style="list-style-type: none"> Describe how living things are classified into broad groups according to common observable characteristics and based on 	<ul style="list-style-type: none"> Draw and label the five kingdoms of living things. 	In Year 7 pupils will be taught: Genetics and evolution. Chromosomes, genes and DNA in hereditary. Differences between species. Variations within a species. Changes in



Science Curriculum Map at STM



			<p>recognising and controlling variables where necessary recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <ul style="list-style-type: none"> reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations 	<p>similarities and differences, including micro-organisms, plants and animals</p> <ul style="list-style-type: none"> Give reasons for classifying plants and animals based on specific characteristics 	<ul style="list-style-type: none"> Draw and label a plant and an animal cell. How did Carl Linnaeus classify living things? Compare the features of each group of vertebrates. Research two invertebrates of your choice. Draw and label a diagram of each. Write a paragraph describing each. Write a paragraph comparing/contrasting each. How have the two animals you have chosen been grouped? 	<p>the environment which may lead to a species less well adapted to compete and reproduce. The importance of maintaining biodiversity.</p>
Pentecost 2	Evolution	B	<ul style="list-style-type: none"> To know fossils are physical evidence of life from long ago To know offspring are usually similar to, but not identical to their parents To know living things can adapt to suit their environment To know who Charles Darwin was and what natural selection is To know who Alfred Wallace was and understand his contribution to the theory of evolution 	<ul style="list-style-type: none"> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago Recognise that living things produce offspring of the same kind, but normally off-spring vary and are not identical to their parents Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. 	<ul style="list-style-type: none"> What are fossils and how are they helpful for palaeontologists? What characteristics could a child inherit from their parents? How have animals adapted to live in their habitats? Give examples. Describe Charles Darwin's Theory of Evolution. What is natural selection? Draw a diagram to support your explanation. Describe what the Wallace Line is and how it contributed to the theory of evolution. 	<p>In Year 7 pupils will be taught: Genetics and evolution. Chromosomes, genes and DNA in hereditary. Differences between species. Variations within a species. Changes in the environment which may lead to a species less well adapted to compete and reproduce. The importance of maintaining biodiversity.</p>