Science Curriculum Road Map

EYFS

To understand and ask questions about the world around them.

Year 1+2 (A)

To understand seasonal changes.
To understand how materials are different.
To understand the basic needs of survival.
To name and group animals and plants.
To find out about the human body.

Can I think about how the science is used in my life?

To ask simple questions and know they can be answered in different ways.
To observe closely using simple equipment.
To take part in simple investigations.
To identify and classify.
TO use observations and ideas to suggest answers to questions.
To gather and record results to help answer the questions.

Year 1+2 (B)

To know that animals have offspring that grow into adults/older.
To understand how to stay healthy.
To understand habitats.
To understand properties of materials and how they are used.
To understand how plants grow.
To understand the senses.

Can I explain how the science I have learnt about is used in everyday life around me?

Year 3+4 (A)

Can I explain how science is used in jobs around me?

To know that light is reflected. To understand how shadows are formed. To know conductors and insulators. To understand how to make a series circuit and how to use lamps and switches within these. To know how soils and fossils are formed. To know the names of different rocks and how they were formed.
To understand the human digestive system. To know the names of different teeth and their functions. To understand plant parts and functions (plant life cycle). To understand food chains.

Year 3+4 (B)

To ask relevant questions using different enquiries to answer them. To set up simple practical,, comparative and fair tests. To use careful observations and measurements. To gather, record, classify and present data. To record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
To report on findings with conclusions and results.
To use results to make suggestions for improvements/raise further questions. To identify differences/similarities related to scientific processes and ideas. Answer questions.

To understand magnets and the force between them. To use scientific language to explain the attraction in experiments.
To understand and identify habitats in the local area and compare to a rainforest.
To know what animals/humans need to survive.(Characteristics Mrs Gren). To understand the water cycle. To understand solids, liquids and gases. To understand how to look after your teeth.
To understand sounds and vibrations.

Can I explain how science has helped the wider world?

Working scientifically

Knowledge and understanding

Uses and implications in the real world.

Year 5+6 (A)

To understand how batteries and cells affect lights in a circuit. To know how circuits work, symbols and how to investigate with circuits. To know how light travels, how we see things and how shadows are formed. To know a range of scientists and theories. To know the names of different forces. To know mechanisms can affect the amount of force needed. To know the characteristics of living things. To classify living things. To know how our bodies develop as we grow up. To understand the human life cyle.

Can I explain how discoveries and science knowledge has helped modern day life?

Year 5+6 (B)

To understand properties of materials, what affects and changes materials and why these changes happen. To understand reversible and irreversible changes. To know the names and positions of planets in our solar system. To know how the sun, moon and Earth move relative to each other To know the sun and stars and their importance. To name parts of the circulatory system and how they work. To know how to stay healthy and the effects of diet, drugs and lifestyle. To know how nutrients help our body. To know how animals have evolved and understand about offspring. To know about life cycles and issues that can disrupt natural life cycles. To know how animals impact on each other.

Year 7

To plan different types of scientific enquiries to answer questions, including recognising variables and controlling when needed. To take measurements with increasing accuracy and precision, repeat when necessary. To record data and results using scientific diagrams, labels, keys, tables, scatter graphs and bar/line graphs. To use test results to make predictions to set up fair tests and comparative tests. Reporting and presenting findings including conclusions and explanations. Identifying scientific evidence that has been used to support or refute ideas or arguments.

Can I use scientific theories to explain how things work in everyday life?

Intent

Our intent in Science is that all children of all abilities will experience a curriculum which provides the children with the opportunity to investigate Science through practical experiences in real life contexts. They will have the opportunity to learn scientific enquiry skills as develop their scientific knowledge. Scientific language will be developed through the topics and activities will encourage their naturally inquisitive minds and offer them opportunities to stimulate their natural curiosity.

Implementation:

- Develop scientific language. Word mats link to vocabulary.
- Incorporate key scientific enquiry skills within topics.
- Teach specific knowledge linked to the topic building on prior learning.
- Offer activities to promote questioning and curiosity.
- Deepen their scientific understanding through carefully planned sequences of lessons.
- Make links to the real world and encourage children to think about the purpose of science (engineering, medicine, scientific jobs and make links to STEM)
- Learning is accessible to everyone including coloured backgrounds, font size, small chunks of information relevant to the reading ages and individual interests/neurodiversity needs taken into account in planning.
- Physical equipment might need to be adapted to provide reasonable adjustments.
- Alternative options to be offered for children to access learning eg practical, verbal quotes to show understanding.
- Risk assessments made to assess safety when using physical resources.

Impact:

By the end of primary school children will have gained a range of scientific knowledge and be will confidently use scientific vocabulary when taking about different topics. They will have a good understanding of the individual skills needed for scientific enquiry and be able to use these to investigate. They will have developed curiosity and questioning skills about different theories in science and the world around them. The children will be able to link their scientific knowledge to real life situations in the outside world.

Science in our curriculum

	Seasonal changes	Plants	Animal including humans	Living things and their habitats	Materials and their properties	States of matter	Rocks	Forces and magnets	Electricity	Light	Earth and Space	Sound	Evolution and inheritance
Reception	T2	T5	T1	T6 and 5	T4	T3							
Year 1	Cycle 1 T3/T6 ~~GFof~~ L Famous faces	Cycle 1 T5 Glorious Growing Cycle 2 T5 Explorer	Cycle 1 T2 Bright Lights Cycle 2 T6 Castles and coasts		Cycle 1 T1 Toys								
Year 2		Cycle 1 Glorious Growing Cycle 2 T5 Explorer	Cycle 1 T2 Bright Lights Cycle 2 T1/T6 H, SH, KN and Toes.	*Cycle 2* T2 What happens where I live?	*Cycle 2* T4 dinosaurs								
Year 3		*Cycle 2* T4 *Rivers and mountains*	Cycle 1 T2 Where in the world				*Cycle 2* *T1* *Stone age*	Cycle 1 T1 Engineers Inventors		*Cycle 2* T2 *Terrible tudors*			
Year 4			*Cycle 2* T6 *Romans*	Cycle 1 T4 Amazon		Cycle 1 T3 ~~R.D~~ and T 5 Greeks			*Cycle 2* T3 *Awesome authors*			Cycle 1 T6 Greeks	
Year 5			*Cycle 2* T6 *Vikings*	Cycle 1 T5 Victorian	Cycle 1 T1 codebreakers T6 Inside out	Cycle 1 T1 codebreakers T6 Inside out		*Cycle 2* T5 *Parliament and power*			Cycle 1 T4 Victorian		
Year 6			Cycle 1 T3 Shang dynasty	*Cycle 2* *T3 life of flying books*					*Cycle 2* *T1* *WW2*	*Cycle 2* T2 *WW2*			Cycle 1 T2 survival of fittest

Year group	Animals including Humans.
1	• Identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles and mammals, and including pets). • Identify, name draw and label the basic parts of the human body and say which parts of the body is associated with each sense.
2	• Notice that animals, including humans, have offspring which grow into adults • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
3	• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • Identify that humans and some animals have skeletons and muscles for support, protection and movement.
4	• Describe the simple functions of the basic parts of the digestive system in humans • Identify the different types of teeth in humans and their simple functions • Construct and interpret a variety of food chains, identifying producers, predators and prey.
5	• Describe the changes as humans develop from birth to old age.
6	• Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans.

Year group	States of matter Properties and materials
1	• . Distinguish between and object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials based on their physical properties.
2	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting, and stretching.
3	• Compare and group together different kinds of rocks based on 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.
4	• Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
5	• Compare and group together everyday materials based on their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Understand that some materials will dissolve in liquid to form a solution, 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 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.

Year group	Plants
1	• Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves, and flowers.
2	• Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
3	• Identify and describe the functions of different parts of plants, roots, stem, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) and how they vary from plant to plant. • Investigate the ways in which water is transported within plants. • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

Year group	Living things and their habitats
2	• Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including micro-habitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.
4	• recognise that living things can be grouped in a variety of ways. • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • recognise that environments can change and that this can sometimes pose dangers to living things
5	• 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.
6	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants, and animals. • Give reasons for classifying plants and animals based on specific characteristics

Year group	Forces and magnets
3	• Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials based on whether they are attracted to a magnet and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.
5	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. • Recognise that some mechanisms, including levers, pulleys, and gears, allow a smaller force to have a greater effect.

Year group	Light
3	• Recognise that they need light to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by a solid object. • Find patterns in the way that the sizes of shadows change.
6	• Recognise that light appears to travel in straight lines. • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

Year group	Electricity
4	• Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches, and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors.
6	• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. • Use recognised symbols when representing a simple circuit in a diagram.

Early Years Curriculum Progression

Across the pioneer federation our middle leaders work with teachers to develop their subject and pedagogical knowledge to enhance the teaching of the curriculum.
Within Early years we are passionate about developing other teachers and middle leader's knowledge of the EYFS curriculum. We actively encourage teachers to spend time within EYFS and review our provision as part of their subject leadership, sharing ideas and effective early years practice.
The table below shows how the Early Years curriculum areas, link with the national curriculum subjects and explain some suggested provision or focus ideas which will support development of pupil knowledge and skills.

Early Years Area of Learning		**National Curriculum Subject Links**	**What could this look like in an EYFS Setting?**
Personal, Social and Emotional Development	Self- Regulation Managing Self Building Relationships	PSHE Curriculum PE, Science Drama Art and Design	Roleplay Areas Playing games, turn taking Stories, Playing and working in pairs or groups Self-care needs – getting dressed, healthy eating
Communication and Language	Listening Attention and Understanding	All subject areas	Attending Assembly, focusing on instructions, listening games. Listening to music, songs stories, and friends. Exploring a range of genres of texts, word play, songs, rhymes, Acting out stories, roleplay
	Speaking	All subject areas	
Maths	Number	Maths Science	Number hunts, counting objects, numbers in provision, numicon, number blocks, practical addition and subtraction. Roleplay shops, buses and centres. Subatising amounts, use of dice, number songs and patterns
	Numerical Patterns	Maths Science History	
Understanding the World	The Natural World	Science	Experiments, walks, roleplay, animal small world areas, topic themes, trips, cars and toys, puzzles, stories.