Scientific Knowledge and Conceptual Understanding Progression Chart

Curriculum Aims

The national curriculum for science aims to ensure that all pupils:

- 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

EYFS

Understanding the World: 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

Personal, Social and Emotional Development – managing self

- Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices

Biology Content

Y1

Animals including humans	Plants	Living things and their habitats	Evolution
I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can compare a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can identify and name a variety of common animals that are carnivores, omnivores and herbivores. I can identify, name, draw and label the basic parts of the human body. I can identify which part of the body is associated with each sense. I can compare humans.	I can identify different plants. I can identify and describe the basic structure of plants. I understand that plants can grow. I can name a variety of common wild plants. I can sort a variety of plants. I can name a variety of common plants that we can eat. I can identify, name and describe the basic structure of deciduous and evergreen trees.		
End of unit quiz	End of unit quiz		
How can we group animals? What makes us human?	How can we identify different plants and trees?		

Y2

Animals including humans	Plants	Living things and their habitats	Evolution
I can find out about and describe the basic needs of animals, including humans, for survival. I notice that animals, including humans have offspring which grow into adults. I can describe the importance for humans to exercise. I can describe the importance for humans to eat the right amounts of different types of food. I can describe the importance for humans to have good hygiene. I can describe the importance for humans to look after themselves.	I can identify that fruit, vegetables and herbs are types of plant that we eat. I can observe and describe how seeds grow into mature plants. I know what plants need to grow and stay healthy. I can explain the life cycle of plants.	I can explore and compare the differences between things that are living, dead, and things that have never been alive. I can identify and name a variety of plants and animals in their habitats, including microhabitats. I can identify and name a variety of plants and animals in their habitats. I can identify that most living things live in a habitat to which they are suited. I can construct a simple food chain.	

End of unit quiz	End of unit quiz	End of unit quiz	
Why do we need to keep healthy?	How do seeds and bulbs grow into healthy plants?	How do we know something is alive?	

Animals including humans	Plants	Living things and their habitats	Evolution
I can identify that humans have bones for support, protection and movement. I can identify that some other animals have bones for support, protection and movement. I understand that animals, including humans, need the right type of nutrition.	I can explore the requirements of plants for life and growth. I can identify, locate and describe the function of different parts of flowering plants. I can identify, locate and describe the function of the roots in plants. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the life cycle of flowering plants, including pollination. I can explore the part that flowers play in the life cycle of flowering plants, including seed formation and seed dispersal.		

End of unit test	End of unit test		
How do the systems inside our body work to make us a healthy human?	How does each part of a plant fulfil its function?		

Y4

Animals including humans	Plants	Living things and their habitats	Evolution
I can name the basic parts of the digestive system and describe their functions. I can identify the different teeth and describe their functions. I can construct and interpret a variety of food chains. I understand what producers, predators and prey are.		I can recognise that living things can be grouped in a variety of ways. I can explore and use classification keys to help group, identify and name a variety of living things in my local environment. I can recognise that environments can change and that this can sometimes pose dangers to living things.	

End of unit test		End of unit test	
How is energy transferred in living things?		How can the environment affect different groups of animals?	

Y5

Animals including humans	Plants	Living things and their habitats	Evolution
I can describe the human life cycle. I understand how a foetus develops in the womb. I can describe what happens when I am a teenager. I can describe what happens when I am a senior.		I can discuss the seven life processes. I can explain how mammals reproduce. I can explain how animals reproduce. I understand reproduction in plants. I can describe the differences in the life cycles of mammals, amphibians, reptiles, insects and birds. I can explain the life cycle of plants.	

End of unit test		End of unit test	
How do we change as we grow older?		How do different living things reproduce?	

Y6

Animals including humans	Plants	Living things and their habitats	Evolution
I can identify and name the main parts of the human circulatory system. I can identify and name the main parts of the heart. I can describe how water and nutrients are transported in humans. I can identify how humans can live a healthy lifestyle.		I can describe how living things can be classified into broad groups. I understand how I can use classification keys to help group, identify and name a variety of living things. I can describe how living things can be classified into broad groups. I understand that microorganisms are also living things. I can describe how living things can be classified into broad groups. I know that scientists have developed different ways to classify living things.	I can identify how plants are adapted to their environment. I can identify how animals are adapted to their environment. I can explain natural selection and how it may lead to evolution. I can explain how adaptations may lead to evolution. I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
End of unit test		End of unit test	End of unit test
How do an animals living systems work together to maintain a healthy body?		How can we classify living things into specific groups?	How have living things evolved over time?

Chemistry Content

Y1

Materials	Rocks	States of matter
I can identify a variety of everyday materials. I can describe the physical properties of a variety of everyday materials. I can distinguish between an object and the material from which it is made. I can compare and group together a variety of everyday materials on the basis of their simple physical properties.		

End of unit quiz		
Why do we use different materials for different things?		

Y2

Materials	Rocks	States of matter
I can identify a variety of everyday materials. I can distinguish between an object and the material it is made from. I can investigate the properties of different materials.		

End of unit quiz			
How are materials chosen in design?			

Y3

Materials	Rocks	States of matter
	I can compare and group together different kinds of rocks on the basis of their appearance. I can compare and group together different kinds of rocks on the basis of their physical properties. I can explain how some rocks are formed. I can explain how the Earth is made up of different layers of rocks and soils I can describe how fossils are formed when things that have lived are trapped within rock.	

	End of unit test	
	How can we classify rocks?	

Y4

Materials	Rocks	States of matter
		I can identify solids, liquids and gases. I can take accurate measurements usingthermometers. I can observe that some materials change state whenthey are heated or cooled. I can identify the part played by evaporation andcondensation in the water cycle. I can associate the rate of evaporation withtemperature.

		End of unit test
		How does temperature affect different materials?

Y5

Materials	Rocks	States of matter
I can compare and group materials according to whether they are solids, liquids or gases and name their properties. I can describe the properties of materials using scientific vocabulary. I can investigate the thermal insulation of different materials. I can compare and group materials based on their response to magnets. I know that some materials dissolve in a liquid to make a solution. I can predict how I could separate mixtures. I can explain why some changes are irreversible.		

End of unit test		
How do we separate materials?		

Physics Content

Y1

Forces and magnets	Seasonal change	Earth and space	Electricity	Sound	Light
	I can observe and describe changes across the four seasons. I can observe how day length varies. I can describe weather associated with the seasons.				

	End of unit quiz				
	What changes occur throughout the seasons?				

Y3

Forces and magnets	Seasonal change	Earth and space	Electricity	Sound	Light
I can compare how different things move. I can compare how objects move on different surfaces I can explore how magnetic forces act at a distance. I can compare and group various everyday materials based on whether they are attracted to a magnet. I can predict whether two magnets will attract or repel each other, depending on which poles are facing. I can record my findings using simple scientific vocabulary.					I can recognise that there needs to be light in order to see things and that darkness is the absence of light I can notice that light is reflected from surfaces. I can recognise that light from the Sun can be dangerous and that there are ways to protect your eyes and skin from the Sun. I can recognise that shadows are formed when light from a light source is blocked by an opaque object. I know that shadows take on the shape of the opaque object. I can predict where a shadow will form in relation to an opaque object and a light source. I can find patterns in the way that the length of shadows change.

End of unit test					End of unit test
How do magnets work?					How does light travel?

Y5

Forces and magnets	Seasonal change	Earth and space	Electricity	Sound	Light
I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and falling objects. I can identify the effect of friction between moving surfaces. I can identify the effect of air resistance. I can identify the effect of water resistance. I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.		I can describe the planets in the solar system. I can describe the Sun, Earth and Moon as approximately spherical bodies. I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. I can describe the movement of the Moon relative to the Earth. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. I can describe the movement of the Moon relative to the Earth.			

End of unit test		End of unit test			
How can we observe forces?		How does the earth fit into our solar system?			

Y6

Forces and magnets	Seasonal change	Earth and space	Electricity	Sound	Light
			I can use symbols when drawing a simple circuit diagram. I can associate the brightness of a lamp with the number and voltage of cells used in the circuit. I can investigate variations in how components function. I can name renewable and non-renewable sources of energy.		I can recognise that light appears to travel in straight lines. I can 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. I can explain how the eye works. I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. I can explain how shadows change during the day.

			End of unit test		End of unit test
			How can circuits vary?		How do our eyes work?