Scientific Knowledge and Conceptual Understanding Progression Chart

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

Year 1/2 Cycle A			
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.		
Year ½ Cycle B			
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	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 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	

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 know what plants need to grow and stay healthy. I can explain the life cycle of plants.	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.	
Year 3/4 Cycle A			
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.		

Year 3/4 Cycle B			
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.	
Year 5			
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 I can explain how animals 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.	
Year 6			
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 describe how living things can be classified into broad groups.	I can identify how plants are adapted to their environment. I can identify how animals are

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 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.	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.

Chemistry

Year 1/2 Cycle A		
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.		
Year 1/2 Cycle B		
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.		
Year 3/4 Cycle A		
Materials	**Rocks**	**States of Matter**
	I can compare and group together different kinds of rocks on the basis of their 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.	
Materials	**Rocks**	**States of Matter**
Year 3/4 Cycle B		
Materials	**Rocks**	**States of Matter**
		I can identify solids, liquids and gases. I can take accurate measurements using thermometers. I can observe that some materials change state when they are heated or cooled. I can identify the part played by evaporation and condensation in the water cycle. I can associate the rate of evaporation with temperature.
Year 5		
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.		

Physics Content

Year 1					
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.				
Year 3					
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 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

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.					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.
Year 4					
Forces and magnets	**Seasonal change**	**Earth and space**	**Electricity**	**Sound**	**Light**
			I can identify common appliances that use electricity. I can construct a simple circuit and name the parts of the circuit. I can identify if a bulb will light up in a circuit.	I can identify how sounds are made, associating some of them with something vibrating. I can recognise that vibrations from sounds travel through a medium to the ear. I can find patterns between the pitch of a	

			I can recognise common conductors and insulators. I can investigate switches.	sound and features of the object that produced it. I can find patterns between the volume of a sound and the strength of the vibrations that	
Year 5					
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.			
Year 6					
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.			