KNIGHTON MEAD PRIMARY ACADEMY

Science Progression of Knowledge

Biology							
Unit	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Plants	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals 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. **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 10: The diversity of organisms, living and extinct, is the result of evolution.**	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. *Identify and name a variety of plants and animals in their habitats, including microhabitats (Y2 – Living things and their habitats).* **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 8: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.** **Big Idea 9: Genetic information is passed down from one generation to another.**	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, waters, 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. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 8: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.** **Big Idea 9: Genetic information is passed down from one generation to another.**	*Recognise that living things can be grouped in a variety of ways (Y4 – Living things and their habitats).* *Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (Y4 – Living things and their habitats).* *Recognise that environments can change and that this can sometimes pose dangers to living things (Y4 – Living things and their habitats).*	*Describe the process of reproduction in some plants and animals (Y5 – Living things and their habitats).*	*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 (Y6 – Living things and their habitats).* *Give reasons for classifying plans and animals based on specific characteristics (Y6 – Living things and their habitats).*

KNIGHTON MEAD PRIMARY ACADEMY

Science Progression of Knowledge

Living things and their habitats	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals 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 (Y1 – Plants).* *Identify and describe the basic structure of a variety of common flowering plants, including trees (Y1 - Plants).* *Identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals (Y1 – Animals including humans).* *Identify and name a variety of common animals that are carnivores, herbivores and omnivores (Y1 - Animals including humans).* *Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals including humans).* *Observe changes across the four seasons (Y1 – Seasonal change).*	Explore and observe 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 microhabitats. 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. *Notice that animals, including humans, having offspring which grow into adults (Y2 – Animals including humans).* **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 8: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.** **Big Idea 10: The diversity of organisms, living and extinct, is the result of evolution.**	*Explore the part that flowers play in the life cycle of flowering plants, including pollinations, seed formation and seed dispersal (Y5 – Plants).*	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. *Construct and interpret a variety of food chains, identifying producers, predators and prey (Y4 – Animals including humans).* **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 8: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.** **Big Idea 10: The diversity of organisms, living and extinct, is the result of evolution.**	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. **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 9: Genetic information is passed down from one generation to another.**	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 plans and animals based on specific characteristics. *Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents (Y6 – Evolution and inheritance).* *Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution (Y6 – Evolution and inheritance).* **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.**

KNIGHTON MEAD PRIMARY ACADEMY

Science Progression of Knowledge

Animals, including humans	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.	Identify and name a variety of common animals, including fish, amphibians, reptiles, birds 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 (fish, amphibians, reptiles, birds and mammals, including pets). Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.**	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. *Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food (Y2 – Living things and their habitats).* **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 8: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.** **Big Idea 9: Genetic information is passed down from one generation to another.**	Identify that animals, including humans, need the right types and amounts 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 for support, protection and movement. **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 8: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.**	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. **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 8: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.**	Describe the changes as humans develop to old age. *Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird (Y5 – Living things and their habitats).* *Describe the life process of reproduction in some plants and animal (Y5 – Living things and their habitats).* **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 9: Genetic information is passed down from one generation to another.**	Identify and name the main parts of the human circulatory system, and describe functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. *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 (Y6 – Living things and their habitats).* *Give reasons for classifying plans and animals based on specific characteristics (Y6 – Living things and their habitats).* **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 8: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.**

KNIGHTON MEAD PRIMARY ACADEMY

Science Progression of Knowledge

Evolution and inheritance	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.		*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 (Y2 – Living things and their habitats).* *Notice that animals, including humans, having offspring which grow into adults (Y2 – Animals including humans).*	*Describe in simple terms how fossils are formed when things that have lived are trapped within rocks (Y3 – Rocks).* *Explore the part flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal (Y3 – Plants).*	*Recognise that environments can change and that this can sometimes pose dangers to living things (Y4 – Living things and their habitats).*	*Describe the process of reproduction in some plants and animals (Y5 – Living things and their habitats).*	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 offspring 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. **Big Idea 7: Organisms are organised on a cellular basis and have a finite life span.** **Big Idea 9: Genetic information is passed down from one generation to another.** **Big Idea 10: The diversity of organisms, living and extinct, is the result of evolution.**

KNIGHTON MEAD PRIMARY ACADEMY

Science Progression of Knowledge

Chemistry							
Unit	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Materials	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.	Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple properties. **Big Idea 1: All matter in the Universe is made of very small particles.**	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 shape of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. **Big Idea 1: All matter in the Universe is made of very small particles.** **Big Idea 3: Changing the movement of an object requires a net force to be acting on it.**	*Compare and group together different types of rocks on the basis of their appearance and simple physical properties. (Y3 – Rocks)* *Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 – Rocks)* *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. (Y3 – Forces and Magnets)* **Big Idea 1: All matter in the Universe is made of very small particles.**	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. *Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 – Electricity)* **Big Idea 1: All matter in the Universe is made of very small particles.** **Big Idea 5: The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate.**	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 if not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. **Big Idea 1: All matter in the Universe is made of very small particles.**	

KNIGHTON MEAD PRIMARY ACADEMY

Science Progression of Knowledge

Rocks	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.	*Distinguish between an object and the material from which it is made. (Y1 – Everyday Materials)* *Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 – Everyday Materials)* *Describe the simple physical properties of a variety of everyday materials. (Y1 – Everyday Materials)* *Compare and group together a variety of everyday materials on the basis of their simple properties. (Y1 – Everyday Materials)*	*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 – Uses of everyday materials)*	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils and forms when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter. **Big Idea 5: The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate.** **Big Idea 10: The diversity of organisms, living and extinct, is the result of evolution.**			*Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6 – Evolution and inheritance)*

Physics							
Unit	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Earth and Space	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.	*Observe changes across the four seasons. (Y1 – Seasonal changes)* *Observe and describe weather associated with the seasons and how day length varies. (Y1 – Seasonal changes)*				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. **Big Idea 2: Objects can affect other objects at a distance.** **Big Idea 6: Our solar system is a very small part of one of billions of galaxies in the Universe.**	

KNIGHTON MEAD PRIMARY ACADEMY

Science Progression of Knowledge

Seasonal changes	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. **Big Idea 5: The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate.** **Big Idea 6: Our solar system is a very small part of one of billions of galaxies in the Universe.**		*Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 – Light)*		*Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5 – Earth and Space)*	
Light	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.	*Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 – Animals including humans)* *Describe the simple physical properties of a variety of everyday materials. (Y1 – Everyday materials)*		Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows changes. **Big Idea 2: Objects can affect other objects at a distance.** **Big Idea 4: The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event.**		*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. (Y5 – Properties and changes of materials).*	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 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. **Big Idea 2: Objects can affect other objects at a distance.** **Big Idea 4: The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event.**

KNIGHTON MEAD PRIMARY ACADEMY

Science Progression of Knowledge

Forces	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.		*Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting or stretching. (Y2 – Uses of everyday materials).*	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 but not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other depending on which poles are facing. **Big Idea 2: Objects can affect other objects at a distance.** **Big Idea 3: Changing the movement of an object requires a net force to be acting on it.** **Big Idea 4: The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event.**		Explain that unsupported objects fall towards the Earth because of the force of gravity acting between 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. **Big Idea 2: Objects can affect other objects at a distance.** **Big Idea 3: Changing the movement of an object requires a net force to be acting on it.** **Big Idea 4: The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event.**	

Sound	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.	*Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 – Animals including humans)*			Identify how sounds are made, associating 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 patterning between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases. *Compare and group materials together, according to whether they are solids, liquids or gases. (Y4 – States of matter)* **Big Idea 2: Objects can affect other objects at a distance.** **Big Idea 4: The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event.**		

KNIGHTON MEAD PRIMARY ACADEMY

Science Progression of Knowledge

Electricity	Children know about similarities and differences in relation to places, materials and living things. They talk about features of their immediate environments and how environments might vary from one another. They make observations of plants and animals and explain why some things occur and talk about changes.				Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming it 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. **Big Idea 4: The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event.**		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 the bulbs, the loudness of the buzzers and the on/off position of the switches. Use recognised symbols when representing a simple circuit in a diagram. **Big Idea 4: The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event.**