Walkeringham Primary School Science Substantive Knowledge Map

2022 - 2023				
KS1 (Year 1 and 2)				
	Enquiry Focus *(National Curriculum Requirement)*	Substantive Knowledge	Subject Specific Vocabulary	Prior Knowledge
Autumn	**Physics (Seasonal Changes) - Why are there so many leaves on the floor?** • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies	• Know the main differences between the four seasons • Know the names of the four seasons • Know the type of weather normally associated with the four seasons • Know that we have the longest periods of light in summer and the shortest periods of light in winter • Know that different parts of the world have their summer and winter at different times to us • Know that the temperature varies during the different seasons	Autumn Winter Spring Summer Temperature Symbol	In Early Years children should have: • Developed an understanding of change • Observed and explained why certain things may occur (e.g. leaves falling off trees, weather changes) • Looked closely at similarities, differences, patterns and change • Commented and asked questions about the place they

				live or the natural world In Year 1 children should have: • Observed changes across the four seasons Children may: • Have some knowledge of were light comes from • Have seen their shadows and may know they appear when it is sunny • Have some understanding of a reflection • May understand they need light to be able to see things
Spring	**Biology (Living Things and their Habitats) – Why do animals choose the habitats they have?** • explore and compare the differences between things that are living,	• Know that animals have preference about the habitats they live in • Identify and name plants and animals in a range of habitats • Know how a specific habitat provides for the basic needs of living things • Match living things to their habitat	Habitat Rainforest Desert Species Pond Indigenous	In Early Years children should have: • Commented and asked questions about the place they live or the natural world

	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	• Know how animals find their food • Name some different sources of food for animals		• Showed care and concern for living things and the environment • Discussed things they have observed such as plants and animals • Noticed features of objects in their environment • Commented and asked questions about their familiar world
Summer	**Biology (Plants) - What are the different parts of plants called?**	• Know the names of parts of a plant • Know the names of a variety of common wild and garden plants	Deciduous Evergreen Environment Blossom	In EYFS Children should have: • Made observations of plants

	• Identify and name a variety of common, wild and green plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees (petals, stem, leaves, root, trunk, branches)	• Know the name of the different parts of a plant, including stem, root, petal and flower • Know the difference between deciduous and evergreen trees • Know the names of a variety of common trees • Know the name of some of the plants that grow in the local environment	Petals Root	• Known some names of plants, trees and flowers • Been able to name and describe different plants, trees and flowers • Shown some care for their world around them In Year 1 Children should have: • Observed and described how seeds ad bulbs grow into mature plants • Found out and described how plants need water, light and warmth to grow and stay healthy
LKS2 (Year 3 and 4)				
Autumn	**Biology (Animals, including Humans) - Why do humans have skeletons and muscles?** • Identify that animals, including humans, need the right types and	• Know about the importance of a nutritious, balanced diet. • Know how nutrients, water and oxygen are transported within animals and humans.	Skeleton Muscles Joint Cartilage Tendon Spine	In Key Stage 1 children should have: • Understood that animals, including humans, have offspring which grow into adults

	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.	• Know about the skeletal and muscular system of a human. • Know the names of some the common joints in our bodies. • Know that humans have skeletons and muscles for support, protection and movement • Know the names of the body parts associated with skeleton and muscles • Know that the body parts have special functions • Know what the function of muscles are • Know what joints are and how they work • Compare the diets of different groups of animals, including humans		• Discussed the basic stages in a life cycle for animals, including humans • Found out and describe the basic needs of animals, including humans, for survival (water, food and air) • Described the importance for humans of exercise, eating the right amounts of different types of food, and hygiene In Year 3 children should have: • Described the simple functions of the basic parts of the digestive system in humans • Identified the different types of teeth in humans and their simple functions

				• Constructed and interpreted a variety of food chains, identifying producers, predators and prey
Spring	**Chemistry (States of Matter) - How do some solids, liquids and gases change state?** • 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	• Know the temperature at which materials change state • Know about and explore how some materials can change state • Know the part played by evaporation and condensation in the water cycle • Know that certain materials can change state • Know what the temperature of water is when it boils or freezes • Know which materials, other than water, change state • Explain the differences between solids, liquids and gases • Know what is meant by the terms: condensation and evaporation	Evaporation Condensation Melting Solidifying Precipitation Degrees - Celsius	In KS1 children should have: • Distinguished between an object and the material from which it is made • Identified and named a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • Described the simple physical properties of a variety of everyday materials • Compared and group together a variety of everyday materials on the basis of their simple physical properties • Identified and compared the suitability of a variety

				of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Found out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching
Summer	**Physics (Electricity) - What is electricity and why is it so important in our lives?** • 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	• Identify and name appliances that require electricity to function. • Construct a series circuit. • Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers). • Know the function of a switch. • Know the difference between a conductor and an insulator; giving examples of each. • Know what electricity is and why it so important in our lives • Know about common appliances that run on electricity • Know how to construct a simple series electrical circuit	Circuit Conductor Insulator Battery Cells Appliance	In Early Years children have: • Some understanding that objects need electricity to work • Have an understand that a switch will turn something on or off Children may: • Be able to name common appliance that run on electricity • Understand how to use electricity safely

	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.	• Identify and name the basic parts of the circuit, including cells, wires, bulbs, switches and buzzers • Know that a switch opens and closes a circuit • Know about some common conductors and insulators		• Have an understanding why electricity is a key part of modern daily life
	Physics (Rocks) - What are the main types of rock on the earth? • 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.	• Compare and group rocks based on their appearance and physical properties, giving a reason. • Know how fossils are formed. • Know how soil is made. • Know about and explain the difference between sedimentary, metamorphic and igneous rock. • Know that the Earth is made up of different types of rocks • Know how fossils are formed • Know what soil is • Know the difference between igneous, sedimentary and metamorphic rocks • Group together different rocks according to different attributes	Sedimentary Metamorphic Igneous Crystals Fossil Soil	In Key Stage 1 children have: • Identified and compared the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Found out how shapes of solid objects made from some materials can be changed by squashing, bending,

	• Recognise that soils are made from rocks and organic matter.	• Know that some crystals are extremely rare and valuable		twisting and stretching Children may: • May have some understanding of a variety of different rocks in the natural world • Some understanding of what soil is (how to identify soil etc) • May have some knowledge of what a fossil is
UKS2 (Year 5 and 6)				
Autumn	**Biology (Animals, including Humans and Living things and their Habitats) - What do we know about the life cycles of humans and various animals?** • Describe the changes as humans develop to old age. • Describe the differences in the life cycles of a	• Know the life cycle of different living creatures, e.g. mammal, amphibian, insect, bird • Know the differences between different life cycles • Know the process of reproduction in plants • Know the process of reproduction in animals • Create a timeline to indicate stages of growth in humans	Puberty Gestation Reproduction Embryo Obese Teenager	**Animals, including Humans** In Lower Key Stage 2 children should have: • Described the simple functions of the basic parts of the digestive system in humans • Identified the different types of teeth in humans and their simple functions

	mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals	• Know about the life cycles of humans and various animals • Know about the life cycle of a human being • Know what the terms puberty, gestation and reproduction mean • Know the life cycle of different living things, e.g. mammal, amphibian, insect and bird • Know about the process of reproduction in plants • Know about the process of reproduction in animals		• Constructed and interpreted a variety of food chains, identifying producers, predators and prey In Year 5 children should have: • Identified and named the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognised the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Described the ways in which nutrients and water are transported within animals, including humans **Living Things and their Habitats**

				In Lower Key Stage 2, children should have: • Recognised that living things can be grouped in a variety of ways • Explored and used classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognised that environments can change and that this can sometimes pose danger to living things In Year 5 children should have: • Described 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 • Given reasons for classifying plants and animals based on specific characteristics
Spring	**Chemistry (Properties and Changes in Materials – Which materials can or cannot be changed back to their original form?** • 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	• Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets • Know and explain how a material dissolves to form a solution • Know and show how to recover a substance from a solution • Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating) • Know and demonstrate that some changes are reversible and some are not • Know how some changes result in the formation of a new material and that this is usually irreversible • Know about materials that can or cannot be changed back to their original form once an action has been taken • Know what a reversible change means	Dissolve Solubility Filtering Melting Separating Thermal	In KS1 children should have: • Distinguished between an object and the material from which it is made • Described the simple physical properties of a variety of everyday materials • Compared and grouped together a variety of everyday materials on the basis of their simple physical properties • Identified, named and compared the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock,

	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	• Know what an irreversible change means • Give examples of reversible and irreversible changes • 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		paper and cardboard for particular uses • Found out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching In Lower Key Stage 2 children should have: • Compared and grouped materials together, according to whether they are solids, liquids or gases • Observed that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius • Identified the part played by evaporation and

				condensation in the water cycle and associate the rate of evaporation with temperature
Summer	**Physics (Forces) - What is force and how does it impact the way things move?** • 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	• Know what gravity is and its impact on our lives • Identify and know the effect of air resistance • Identify and know the effect of water resistance • Identify and know the effect of friction • Explain how levers, pulleys and gears allow a smaller force to have a greater effect • Know what a force is and how it impacts on the way things move • Know what gravity is and its impact on our lives • Identify and know the effect of air resistance • Identify and know the effect of water resistance • Identify and know the effect of friction • Explain how levers, pulleys and gears allow a smaller force to have a greater effect	Friction Gravity Air resistance Water resistance Levers Pulleys	In Lower Key Stage 2 children should have: • Compared how things move on different surfaces • Known how a simple pulley works and use making lifting an object simpler • Noticed that some forces need contact between two objects, but magnetic forces can act at a distance • Observed how magnets attract and repel each other and attract some materials and not others • Compared and grouped together a variety of everyday materials on the basis of whether they are

				attracted to a magnet, and identify some magnetic materials • Described magnets as having two poles • Predicted whether two magnets with attract or repel each other, depending on which poles are facing
	Physics (Light) - How do our eyes help us to see? • 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	• Know how light travels • Know and demonstrate how we see objects • Know why shadows have the same shape as the object that casts them • Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc. • Know why we can see and the part our eyes have in helping us see • Know that light travels in straight lines • Understand that because light travels in straight lines objects are seen because they give out or reflect light into the eye • Know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes	Retina Cornea Iris Pupil Lens Light wave	In Lower Key Stage 2 children should: • 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

	• Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	• Know that light travels in straight lines and therefore shadows have the same shape as the objects that cast them • Know how our eyes work		light source is blocked by a solid object. • Find patterns in the way that the sizes of shadows change.
2023-2024				
KS1 (Year 1 and 2)				
	Enquiry Focus *(National Curriculum Requirement)*	Substantive Knowledge	Subject Specific Vocabulary	Prior Knowledge
Autumn	**Biology (Animals, including Humans) - How are animals classified?** • 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)	• Know how to classify a range of animals • Know the difference between carnivore, omnivore and herbivore • Know the difference between a mammal, reptile and amphibian • Know how to classify by living, non-living and never alive • Know the names of some common birds • Begin to know why certain animals live in certain areas	Amphibians Reptiles Mammals Herbivore Carnivore Omnivore	In Early Years children should have: • Been able to show care and concern for living things • Have some understanding of growth and change • Discussed things they have observed including animals

	• identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense **Biology (Animals, including Humans) - How will 5-a- day keep me healthy?** • 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	• Know how important it is to keep our bodies healthy • Know why a balanced diet is important for humans • Know what is meant by a balanced diet • Know why exercise and good hygiene are also important for humans • Know that the babies will grow into adults • Know what humans need to survive (including food and water)	Proteins Carbohydrates Off-spring Fats Nutrition Hygiene	In Early Years children should have: • Identified different parts of their body. • Had some understanding of healthy food and the need for variety in their diets • Known the effects exercise has on their bodies • Have some understanding of growth and change
Spring	**Chemistry (Everyday Materials) - What are the materials around us called?**	• Know the names and uses of some common materials • Know that there are many different types of materials	Plastic Stretch Stiff Metal Liquid	In Early Years children should have: • Been able to ask questions about the place they live

	• Distinguish between and object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, metal, 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 on the basis of their simple properties **Chemistry (Uses of Everyday Materials) - How do we make the most of the materials around us?** • Identify and compare the suitability of a variety of everyday materials,	• Know the names of many types of materials • Know what we use glass, wood and bricks for • Know that plastics are easy to bend • Know that some materials are not useful for certain things • Know about the properties and uses of different materials • Know why some materials are more suitable than others for specific uses • Know why glass, wood, plastic, brick or paper would be used for certain jobs • Know that some materials can be squashed, twisted or bent according to need	Gas Stretching Squashing Bending Twisting John Dunlop Charles Macintosh	• Discussed why things happen and how things work • Discussed the things they have observed such as natural and found objects • Manipulated materials to achieve a planned effect

	including wood, metal, plastic, glass, rock, brick, 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 • *Know why a material might or might not be used for a specific job*	• Know why certain materials are suitable for many different uses • Know about the lives of important people who have developed useful new materials		In the previous unit children have: • Distinguish between and object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, metal, 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 on the basis of their simple properties
Summer	**Biology (Animals, including Humans) - What are our body parts called?** • Identify, name, draw and label the basic parts of the human body.	• Know the names of the visible parts of the human body • Know what the five sense are • Know what each of our sense does • Know what sense can be associated with each body part	Toes Fingers Touch Hearing Taste Chest	In EYFS Children should have: • Made observations of plants • Discussed names of plants, trees and flowers

	• Say which part of the body is associated with each sense. **Biology (Plants) - What do plants and trees need to grow healthy?** • 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	• Know what plants including trees need to survive • Know that a plant needs light, water, air and soil to survive • Know how important trees are for the environment • Know that trees and shrubs take in water and a gas called carbon dioxide and give out a gas called oxygen • Know how to set up a fair test to find out what plants needs to survive • Know the names of many common trees by safe of leaf and shape of tree	Trunk Stem Blossom Bulbs Woodland Crown	• Been able to name and describe different plants, trees and flowers • Shown some care for their world around them In Year 1 pupils should have: • Identified and named a variety of common, wild and green plants, including deciduous and evergreen trees • Identified and described the basic structure of a variety of common flowering plants, including trees (petals, stem, leaves, root, trunk, branches) • Identified and named a variety of common animals, including fish, amphibians, reptiles, birds and mammal
LKS2 (Year 3 and 4)				

Autumn	**Physics (Light) - Why do we have light and dark and what is its impact on our everyday life?** • 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 a solid object • find patterns in the way that the size of shadows change	• know what dark is (the absence of light) • know that light is needed in order to see • know that light is reflected from a surface • know and demonstrate how a shadow is formed • explore shadow size and explain the changes • know the danger of direct sunlight and describe how to keep protected • Know why we have light and dark and its impact on our everyday life • Know what dark is (in relation to absence of light) • Know that we need light so we can see things • Know that light can be reflected • Know how a shadow is formed and why they change shape • Know the dangers of looking directly at the Sun	Reflection Shadows Opaque Refraction Convex Concave	In Key Stage 1 children should have: • Observed changes across the four seasons • Observed and describe weather associated with the seasons and how day length varies Children may: • Have some knowledge of were light comes from • Have seen their shadows and may know they appear when it is sunny • Have some understanding of a reflection • May understand they need light to be able to see things
	Physics (Sound) - How is sound created and how does it travel? • Identify how sounds are made, associating some	• Know how sound is made • Know how sound travels from a source to our ears • Know how sounds are made, associating some of them with vibrating	Pitch Volume Vibrating Frequency Vibrating	In Key Stage 1 children should have: • An understanding that objects make different sounds

	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 • Recognise that sounds get fainter as the distance from the sound source increases	• Know the correlation between pitch and the features of the object producing a sound • Know the correlation between the volume of a sound and the strength of the vibrations that produced it • Know what happens to a sound as it travels away from its source • Know how we get to hear things and how sound is created • Know how sound is made and what happens as sound travels away from its source • Know how sound travels from the source to the ears • Know to associate sound with vibration • Know the correlation between pitch and the object producing a sound • Know the correlation between the volume of a sound and the strength of the vibrations that produced it	Hammer	• Some understanding that they use their ears to hear sounds • Know about their different senses
Spring	**Biology (Animals, including Humans) - What happens to the food we eat?** • describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans	• identify and name the parts of the human digestive system • know the functions of the organs in the human digestive system • identify and know the different types of teeth in humans • know the functions of different human teeth	Oesophagus Pancreas Organ Intestine Molars Canine	In Key Stage 1 children should have: • Understood that animals, including humans, have offspring which grow into adults • Understood the basic stages in a life cycle

	and their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey	• use food chains to identify producers, predators and prey • construct food chains to identify producers, predators and prey • Know exactly what happens to the food we eat • Know and name the parts of the digestive system • Know about the function of each organ of the digestive system • Know and identify the different types of teeth in humans • Know the function of different human teeth • Construct and use food chains to identify producers, predators and prey		for animals, including humans • Found out and describe the basic needs of animals, including humans, for survival (water, food and air) • Described the importance for humans of exercise, eating the right amounts of different types of food, and hygiene In Year 3 children should have: • Identified that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat • Known how nutrients, water and

				oxygen are transported within animals and humans • Known about the importance of a nutritious, balanced diet • Identified that humans and some other animals have skeletons and muscles for support, protection and movement
	Physics (Forces and Magnets) – What do we mean by a force? • 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	• Know about and describe how objects move on different surfaces. • Know how a simple pulley works and used to lift an object. • Know how some forces require contact and some do not, giving examples. • Know about and explain how magnets attract and repel. • Predict whether magnets will attract or repel and give a reason. • Know what we mean by a 'force' • Know how different surfaces speed thing up or slows things down • Know what a pulley is and how it works • Know how magnets work	Repel Attract Pole Pulley Magnet Magnetism	In Key Stage 1 children should have: • An awareness of how to make things stop and start, using simple pushes and pull • Discussed and known about floating and sinking

	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.			
Summer	**Biology (Plants and Living Things and their Habitat) - What part do different parts of plants play in helping them grow healthily?** • 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	• Know the function of different parts of flowing plants and trees • Know the function of flowers in a flowering plant • Know what helps a plant grow • Know how water is transported in a plant • Know what pollination is • Know about seed dispersal • Understand what a plant needs to flourish and find out about its life cycle • Know the function of the different parts of the flowering plant • Know that light, air, water, nutrients from soil are all important for plant growth • Find out how water is transported within a plant	Pollination Seed dispersal Seed formation Nutrients Stigma Anther	**Plants** In Key Stage 1 Children should have: • Observed and described how seeds and bulbs grow into mature plants • Found out and described how plants need water, light and warmth to grow and stay healthy **Living Things and their Habitats** In Key Stage 1 children should have: • Explored and compared the

	• 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	• Know the part that flowers play in the life cycle of a flowering plant • Know about pollination, seed formation and seed dispersal		difference between things that are living, dead and things that have never been alive • Identified 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 • Identified and named a variety of plants and animals in their habitats, including micro habitats • Described how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food

UKS2 (Year 5 and 6)				
Autumn	**Physics (Earth and Space) - What do we know about the Sun, Earth, Moon and the Planets?** • 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.	• Know about and explain the movement of the Earth and other planets relative to the Sun • Know about and explain the movement of the Moon relative to the Earth • Know and demonstrate how night and day are created • Describe the Sun, Earth and Moon (using the term spherical) • Know about the Sun, Earth, moon and the plants • Know about and explain the movement of the Earth and other planets relative to the Sun • Know about and explain the movement of the Moon relative to the Earth • Know and demonstrate how night and day are created • Describe the Sun, Earth and Moon (using the term spherical) • Know information about the planets	Solar system Planet Spherical Crescent moon Gibbous moon Eclipse	In Key Stage 1 and in Lower Key Stage 2 children should have: • An understand changes in weather patterns and seasons • Compared how things move on different surfaces • Noticed that some forces need contact between two objects, but magnetic forces can act at a distance • Described magnets as having two poles • Predicted whether two magnets with attract or repel each other, depending on which poles are facing
Spring	**Biology (Animals, including Humans) - How does the heart work and why is it so important?** • identify and name the main parts of the human	• Identify and name the main parts of the human circulatory system • Know the function of the heart, blood vessels and blood • Know the impact of diet, exercise, drugs and lifestyle on health	Atriums Cardiovascular Capillaries Pulse Ventricles Blood vessels	In Lower Key Stage 2 children should have: • Described the simple functions of the basic parts of the digestive system in humans

	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	• Know the ways in which nutrients and water are transported in animals, including humans • Know about the function of the heart and the importance of blood in keeping us alive • Identify and name the main parts of the human circulatory system • Know the function of the heart, blood vessels and blood • Know the impact of diet, exercise, drugs and lifestyle on health • Know the ways in which nutrients and water are transported in animals, including humans • Know who William Harvey was		• Identified the different types of teeth in humans and their simple functions • Constructed and interpreted a variety of food chains, identifying producers, predators and prey In Year 5 children should have: • Described the changes as humans develop to old age. • Known the life cycle of different living things, e.g. Mammal, amphibian, insect bird. • Known the differences between different life cycles. • Known the process of reproduction in plants.

				• Known the process of reproduction in animals.
	Physics (Electricity) - How does electricity work and how does its power vary? • 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	• Compare and give reasons for why components work and do not work in a circuit • Draw circuit diagrams using correct symbols • Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer. • Know what electricity is and why it so important in our lives • Know about common appliances that run on electricity • Know how to construct a simple series electrical circuit • Identify and name the basic parts of the circuit, including cells, wires, bulbs, switches and buzzers • Know that a switch opens and closes a circuit • Know about some common conductors and insulators	Circuit Conductor Insulator Battery Cells Appliance	• In Lower Key Stage 2 children should have: • Identified common appliances that run on electricity • Constructed a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Identified whether a lamp will light in a simple series circuit, based on whether the lamp is part of a complete loop with a battery • Recognised that a switch opens and closes the 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 • Known the difference between a conductor and an insulator; giving examples of each • Understood how and why we act safety when using electricity
Summer	**Biology (Evolution and Inheritance) - How have living things on earth changed over time?** • 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	• Know how the Earth and living things have changed over time • Know how fossils can be used to find out about the past • Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) • Know how animals and plants are adapted to suit their environment • Link adaptation over time to evolution • Know about evolution and can explain what it is • Know how living things on Earth have changed over time • Know that living things have changed over time	Off-spring Adaptation Evolution Inheritance Palaeontologist Genotype	From Key Stages 1 and Lower Key Stage 2 children should have: • An understand there is a variety of life on Earth • Known that some animal's differences are important to their survival • Known how animals and plants reproduce • Known how fossils form over time

	• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	• Know the part fossils play in helping us understand more about living things that inhabited our Earth millions of years ago • Know that living things produce off-spring of the same kind • Know that off-spring vary and are not normally 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		
	Biology (Living Things and their Habitats) – How are living things grouped and classified? • 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	• Classify living things into broad groups according to observable characteristics and based on similarities & differences • Know how living things have been classified • Give reasons for classifying plants and animals in a specific way • Understand how all living things are grouped and classified • Be able to classify living things into broad groups according to observable characteristics and based on similarities and differences • Know how living things have been classified • Give reasons for classifying plants and animals based on specific characteristics	Vertebrates Invertebrates Species Fungi Bacteria Algae	In Lower Key Stage 2 children should have: • Recognised that living things can be grouped in a variety of ways • Explored and used classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognised that environments can change and that this can sometimes pose

		• Know about vertebrate and invertebrate animals • Know who Carl Linnaeus is		danger to living things In Year 5 children should have: • Described the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Described the life process of reproduction in some plants and animals