

Beam County Primary School: Progression Map

Subject: Science



Key Concepts

Changes over time (gradual or sudden alterations/transformations)

Cause and Effect (changes occur due to specific reasons and these lead to observable effects and outcomes, interdependence and interaction - processes)

Energy transfer and transformation

Sorting by observable characteristics (classification and grouping to organise knowledge and draw conclusions)

Patterns and relationships (identify irregularities and predict outcomes based on observed data)

Observations, data and evidence support scientific conclusions (scientific enquiries provide data to draw conclusions)

EYFS	End Points EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End Points KS2
<p><u>Animals including Humans</u></p> <p>Humans have different body parts related to specific sense:</p> <p>Skin is related to the sense of touch</p> <p>Eyes are related to sense of sight</p> <p>Nose is related to sense of smell</p> <p>Ears are related to the sense of hearing.</p> <p><u>Animals</u></p> <p>Animals have basic needs: food, heat, water</p> <p>Some animals hatch from eggs.</p> <p>Some young animals look like their parents, but some don't.</p> <p>Different animals have different</p>	<p>1. 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</p>	<p><u>Animals including Humans</u></p> <p>Humans are mammals. The main parts of the human body are head, arms, hands, torso, legs and feet.</p> <p>Humans have five basic senses which help us to make sense of the world around us: sight, touch, hearing, smell and taste.</p> <p>Humans vary through their skin, hair, eye colour, shoe size and fingerprint.</p> <p>Vertebrates are animals that have a backbone.</p> <p>There are five vertebrate groups: mammals, amphibians, reptiles, birds and fish.</p>	<p><u>Animals including Humans</u></p> <p>Animals grow and change throughout their life.</p> <p>All animals need food, water and air to survive.</p> <p>Humans need to eat food from the four main food groups each day.</p> <p>Humans need to stay clean and hygienic to be healthy.</p> <p>Regular physical activity is important for good health.</p> <p><u>Plants</u></p> <p>Germination is when a seed starts to sprout and grow.</p> <p>Seeds need certain conditions to germinate. All require water, some require warmth and most do not need light.</p>	<p><u>Animals including Humans</u></p> <p>The different types of food we eat contain different nutrients. These are useful for our bodies in different ways.</p> <p>A healthy diet contains a balance of different nutrients.</p> <p>Some of the bones in our skeleton protect our vital organs. Other bones support so our body can remain upright. Our joints allow us to move our bones.</p> <p>Muscles work in pairs to move the bones in our skeleton.</p> <p>Vertebrate bodies are supported by an internal bony skeleton including a spine.</p> <p>Invertebrates have no bony skeleton.</p> <p>Vertebrate skeletons all have a spine. The</p>	<p><u>Animals including Humans</u></p> <p>The digestive system breaks down food we eat into smaller pieces that our body can use for energy and growth and gets rid of waste.</p> <p>The main parts of the digestive system are the mouth, oesophagus, stomach, small intestine, large intestine, rectum and anus.</p> <p>Humans have different types of teeth: canines, incisors and molars.</p> <p>Teeth have different shapes to break up different foods. Incisors are used for cutting food, canines for tearing and molars for grinding.</p> <p>Food is chemically broken down in the stomach and small intestine, the large intestine absorbs water and the rectum stores poo.</p>	<p><u>Animals including Humans</u></p> <p>All living things have a life cycle which includes growth and reproduction, eventually ending in death and decay.</p> <p>Most animals reproduce sexually. The sperm from the male fertilises the female egg inside her body.</p> <p>Female birds lay eggs with hard shells. These may or may not be fertilised.</p> <p>Mammal reproduce by sexual reproduction. Female mammals give birth to live young and produce milk.</p> <p>Amphibians reproduce by sexual reproduction. Amphibian female eggs are fertilised outside her body. Some amphibians go through a process of metamorphosis.</p>	<p><u>Animals including Humans</u></p> <p>From before they are born to puberty, humans go through periods of development: gestation, infancy and childhood.</p> <p>The male and female body changes as it goes through puberty from about age 12. Changes occur that prepare women to have babies and sexual organs develop.</p> <p>The human body changes as it gets older. The human life cycle has different stages: gestation, infancy, childhood, puberty, adulthood, ageing and death.</p> <p>Blood carries water and the nutrients from food that are used for energy, health and growth around the body.</p> <p>Blood is made up of plasma, red blood cells,</p>	<p>1 Have obtained an understanding of the key domains of knowledge within biology and can use key concepts to make links between domains.</p>

<p>characteristics and habitat.</p> <p>Plants Plants grow from seeds.</p> <p>Plants have basic needs: sunlight, food, water, soil and heat.</p> <p>Trees and flowers are types of plants.</p> <p>A tree has leaves, trunk, branches and roots/</p> <p>A flower has petals, leaves, stem and roots.</p> <p>Our changing world: the local environmental</p> <p>We can use our senses to explore and observe changes in different seasons.</p> <p>Some trees go through physical changes during different season. Some plants can grow during winter and autumn seasons.</p>		<p>Reptiles: eggs, claws, teeth, scaly skins, live on land.</p> <p>Birds: eggs, feathers, beaks, claws and wings.</p> <p>Fish: water living, scales, gills, teeth, fins and eggs.</p> <p>Amphibians: eggs, water, land living and changes as they grow.</p> <p>Mammals: hair or fur, birth to live young, milk for offspring, look like younger version of parents.</p> <p>Animals can be grouped by what they eat as carnivores, herbivores and omnivores.</p> <p>Plants</p> <p>The names of the parts of a flowering plants that grow above the ground are stem, leaf and flower.</p> <p>Roots grow under the ground and different plants have different roots.</p> <p>Some trees are flowering plants which have roots, stems, leaves and flowers. There are differences between deciduous and evergreen trees.</p>	<p>Seeds come in a variety of sizes that do not determine the height of the plant.</p> <p>Mature plants can grow from either seeds or bulbs.</p> <p>Seeds germinate into seedlings and then grow into mature plants.</p> <p>Mature plants need light and water to grow healthy.</p> <p>Different mature plants require different temperatures to grow healthily depending on the type of the plant.</p> <p>Environmental</p> <p>All things are either living, dead or have never been alive.</p> <p>Living things include plants and animals.</p> <p>Things made of rock, metal and plastic have never been alive.</p> <p>A habitat provides the basic needs of the animals and plants in it: shelter, food and water.</p> <p>There are different types of habitat – animals and plants live in those which are suited.</p> <p>Animals obtain their food from plants and other animals.</p>	<p>bones vary in size and shape.</p> <p>Plants</p> <p>Leaves capture sunlight. The energy from sunlight is used to produce the plant's food.</p> <p>Roots anchor the plant into the soil. Roots absorb water and minerals which is transported to the leaves and flowers via small tubes in the stem. The stem provides support for the plant.</p> <p>Leaves have tiny holes in them which allow air into the plant. The energy from the sunlight is used to turn air and water into the plant's food.</p> <p>When plants are overcrowded, they compete with each other for sunlight, water and nutrients.</p> <p>Different plants live and adapt in different habitats.</p> <p>The flower produces the plant's seeds.</p> <p>A flower has a female part (carpel) which includes the ovary, which contains ovules. The male part (stamen) produces pollen, petals and sepals.</p> <p>Pollination is when the pollen from one flower is transferred to another flower.</p>	<p>A food chain shows how energy and nutrients pass from one living thing to another as they get eaten by each other.</p> <p>A producer (plant) makes food using water, air and the energy of the sun. This is passed to the consumer that eats it.</p> <p>Animals have teeth appropriate to the food they eat. Carnivores have sharp slicing teeth for eating meat. Herbivores have flat topped teeth for crushing plant matter.</p> <p>Environmental</p> <p>Litter is things that have been thrown away and that are lying on the ground.</p> <p>Some waste materials can be processed so that they can be reused.</p> <p>Decomposition is when dead plants and animals break down into very small pieces that can be used to help other living things grow.</p> <p>Worms, bacteria and fungi help organic materials to decompose.</p> <p>Some materials including plastics and glass cannot decompose. They are not biodegradable.</p>	<p>Majority of insects go through a process of complete metamorphosis.</p> <p>Plants</p> <p>All living things have a life cycle which includes growth and reproduction, ending in death and decay.</p> <p>Flowers contain male sex organs called stamen and female sex organ called carpel.</p> <p>Pollen must be moved to a part of the carpel called the stigma for reproduction to take place. This is called pollination.</p> <p>Seeds are the product of sexual reproduction. They are genetically different from their parents.</p> <p>Asexual reproduction creates plants that are genetically identical to the parents.</p>	<p>white blood cells and platelets.</p> <p>The circulatory system pumps blood from the heart to the lungs and back in a figure of 8 system.</p> <p>The heart is a muscle with two separate sides. One side pumps blood full of oxygen from the lungs whilst the other side pumps blood with the oxygen used up from the body.</p> <p>Arteries are blood vessels that carry blood away from the heart. Veins carry the blood from the rest of the body back to the heart. Veins have valves to stop the blood flowing backwards.</p> <p>A healthy diet helps maintain or improve general health in humans and animals.</p> <p>Not eating a balanced diet carries a risk of malnutrition which carries unplanned weight loss, muscle loss and mineral deficiencies.</p> <p>Our pulse increases when we exercise to meet the increased need for oxygen in our muscles.</p> <p>Regular physical activity prevents obesity; keeps heart, lungs and muscles healthy, increases flexibility and strength and helps to fight off infections.</p>	
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							<p>Charles Darwin and Alfred Wallace both proposed mechanisms for Natural Selection.</p> <p><u>Classification</u></p> <p>Living things are classified into five groups called kingdoms: plants, animals, fungi, Protista and Monera.</p> <p>Plants are divided into: flowering plants, ferns, mosses and conifers.</p> <p>Animals are divided into vertebrates and invertebrates. Invertebrates are split into molluscs, arthropods, flatworms, Echinodermata and annelids.</p> <p>Arthropods are split into four groups: myriapods, insects, arachnids and crustaceans.</p>
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Early Learning Areas:
 UTW: Understanding the world involves guiding children to make sense of their physical world and their community
 UTW: Frequency and range of children's personal experiences increases their knowledge and sense of the world around them
 UTW: Foster their understanding of our culturally, socially, technologically and ecologically diverse world
 C&L: Language-rich environment is crucial.
 C&L: By commenting on what children are interested in or doing, and echoing back what they say with new vocabulary added, practitioners will build children's language effectively
 C&L: Through conversation, storytelling and role play, where children share their ideas with support and modelling from their teacher, and sensitive questioning that invites them to elaborate, children become comfortable using a rich range of vocabulary and language structures.

KS1
 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.
 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
 Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
 Observe changes across the four seasons
 Observe and describe weather associated with the seasons and how day length varies.
 Explore and compare the differences between things that are living, dead, and things that have never been alive
 Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
 Identify and name a variety of plants and animals in their habitats, including 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.
 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.
 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.

LKS2
 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
 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.
 Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat

Identify that humans and some other animals have skeletons and muscles for support, protection and movement.
 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.
 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

UKS2
 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.
 Describe the changes as humans develop to old age.
 Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals
 Give reasons for classifying plants and animals based on specific characteristics.
 Identify and name the main parts of the human 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.
 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.

<p>Materials</p> <p>Different materials have different properties.</p> <p>Materials are selected for different functions such as clothing and animal and human home, based on their physical properties.</p> <p>Some materials can melt in warmer conditions.</p> <p>Water changes to ice cubes when we place it in the freezer (very cold condition)</p> <p>A sieve can be used to separate large objects.</p> <p>Changes can occur when we mix wet and dry materials together.</p>	<p>2. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter</p>	<p>Materials</p> <p>Everything around us is made from materials.</p> <p>Some materials are natural which means they are used without modification.</p> <p>Some materials are manufactured, made by changing natural source materials.</p> <p>Different materials have different characteristics.</p> <p>Materials should be used carefully and can often be reused and recycled.</p> <p>Objects can be sorted according to their source materials.</p> <p>Objects can be made from more than one material, including recycled materials.</p> <p>Materials have physical</p>	<p>Materials</p> <p>Objects can be tested and sorted according to the properties of the materials they are made from.</p> <p>Inventors discover new uses for materials and create new materials.</p> <p>Squashing, bending, stretching, twisting can change the shape of some materials.</p> <p>Different properties allow the shapes of materials to be changed in different ways.</p> <p>Objects are made from materials with properties that make them fit for purpose.</p>	<p>Rocks</p> <p>Rocks can be compared and grouped according to their appearance and simple properties.</p> <p>Rocks change over time depending on their physical properties.</p> <p>Soils are made from rocks and organic material.</p> <p>Specific properties of different soils affect whether they absorb and hold water or not.</p> <p>Fossils are formed when living things are trapped within a rock.</p> <p>Human knowledge of the living world has been developed through the lives and work of fossil scientists such as Mary Anning.</p>	<p>Changes of State</p> <p>A solid holds its shape. Liquids can be poured and will spread out. Both solids and liquids have a fixed volume.</p> <p>Water freezes at zero degrees Celsius.</p> <p>Freezing/solidifying is when a liquid changes state into a solid.</p> <p>Melting is when a solid changes state into a liquid. Different materials melt at different temperatures.</p> <p>Melting and freezing are reversible process.</p> <p>Air is a gas. Gases have substance and weight. They change in shape and volume to fill the space they are in.</p> <p>When water changes from liquid to gas it becomes water vapour. This is called evaporation.</p> <p>When water changes state from liquid into gas, it becomes water</p>	<p>Materials</p> <p>Materials have physical properties that make them fit for certain purposes.</p> <p>Weathering, wear and tear can occur over time and this will have an impact upon a material's fitness for purpose.</p> <p>The properties of liquids include having a fixed weight, fixed volume, ability to flow, level of viscosity and take on the shape of a container.</p> <p>The viscosity of a liquid describes how thick/thin it is and how fast/slow it will flow.</p> <p>A thermal insulator is a material that transmits heat through it very well.</p> <p>A thermal insulator keeps hot things hot and cold things cold.</p> <p>Materials can be absorbent and can soak up and take in liquid.</p>		<p>2 Have obtained an understanding of the key domains of knowledge within chemistry and can use key concepts to make links between domains.</p>
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		properties that make them useful for different purposes.			<p>vapour. This is called condensation.</p> <p>The Earth's water can be a liquid, gas or solid. Water evaporates into the air, then the warm air cools as it rises, leading to condensation and the formation of clouds. Water droplets in the clouds fall as rain. Water returns to the sea via streams, lakes and rivers to continue the water cycle.</p>	<p>Some materials and permeable and let water pass through.</p> <p>Some materials are waterproof and do not let water pass through.</p> <p>Solid, dry mixtures of materials can be separated by sieving.</p> <p>Some solids dissolve in water while others do not.</p> <p>Solids that do not dissolve can be separated from a liquid by filtering.</p> <p>Solids which dissolve can be retrieved from a solution if the liquid is evaporated.</p> <p>Some changes of state are reversible, and others are non-reversible.</p> <p>Non-reversible changes result in the formation of new materials.</p>	
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KS1
 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 physical properties.
 Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
 Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

LKS2
 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
 Recognise that soils are made from rocks and organic matter.
 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

UKS2
 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 is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

<p>Light</p> <p>Night is dark as there is little or no light.</p> <p>Sun being our biggest source of light and that this helps us to see objects easily during the day.</p> <p>.</p> <p>Earth in space</p> <p>The moon has a spherical shape.</p> <p>The moon is far from Earth and we need a space rocket to travel to it.</p> <p>We need to travel through space to get to the moon.</p> <p>Electricity and movement</p> <p>Objects can move by pushing or pulling.</p> <p>Demonstrate how objects can move, speed up, slow down and change shape.</p> <p>Some objects float, and some objects sink.</p> <p>Not all materials are attracted to magnets (for eg: plastic and wood are not attracted to magnets).</p>	<p>3. Talk about why things happen and why things work.</p>	<p>Light</p> <p>Light comes from light sources. Dark is the absence of light. Nothing can be seen if there is no light.</p> <p>Objects are easier to see when there is more light.</p> <p>Shiny materials and objects are good reflectors of light. When there is less light more reflective materials are easier to see than less reflective ones.</p> <p>Shadows are formed when light is blocked. Objects made from opaque materials cast the darkest shadows.</p> <p>Shadows are the same shape as the object that cast them.</p> <p>Light from the sun can be dangerous so we need to protect our eyes.</p> <p>The size and position of a shadow can be changed by moving the light source.</p> <p>Forces</p> <p>A force is a push or pull that can make something move.</p> <p>The surface a spinning top is moving on affects how long it spins for.</p>	<p>Sound</p> <p>Sounds are made by something vibrating; this is the source. Different sources make different sounds.</p> <p>Vibrations travel from the source through a material to the ear so that we can hear them.</p> <p>Sounds can be quiet or loud; volume depends on the size of the vibrations.</p> <p>Sounds get fainter as the distance from the sound source increases.</p> <p>Sounds can be high or low in pitch. Pitch depends on the size of the object vibrating.</p> <p>The pitch of a note played on a stringed instrument depends on the length, thickness and tautness of the vibrating string.</p> <p>Electricity</p> <p>Many household devices and appliances run on electricity. Some plug into the mains and others run on batteries.</p> <p>An electrical circuit consists of a cell or battery connected to a component using wires.</p>	<p>Forces</p> <p>Friction is a force that makes it harder to move an object across a surface or slows down an object moving over a surface.</p> <p>The unit of measurement of a force is Newtons.</p> <p>Gravity is a force that pulls all objects to the centre of the Earth.</p> <p>Air Resistance is a force that slows down an object moving through air.</p> <p>The amount of air resistance depends on the surface area of the object.</p> <p>It is air resistance, not the object's weight, that affects how quickly an object falls.</p> <p>Water resistance is a force that slows down an object moving through water.</p> <p>The amount of water resistance depends on the shape of an object.</p> <p>A pulley mechanism is used for lifting heavy objects by applying a pulling force at one end of rope attached to the load which passes over the wheel.</p> <p>A lever is a long rigid arm that rests on a pivot. A force is</p>	<p>Light</p> <p>Light appears to travel in straight lines.</p> <p>We can see a light source because some of the light from the source enters our eyes.</p> <p>Light travelling in straight lines can be used to explain why a shadow is the same shape as the object that casts it and how the shape of shadows can be changed.</p> <p>Light is reflected from shiny surfaces in a predictable way because it travels in straight lines.</p> <p>We can see objects because they reflect some of the light that falls onto them into our eyes. .</p> <p>Electricity</p> <p>Circuit diagrams using standard symbols are used to record circuits.</p> <p>Adding cells to a circuit makes a lamp brighter.</p> <p>A lamp gets brighter if the voltage in the circuit is increased.</p> <p>A lamp gets dimmer if thinner wires are used.</p> <p>If the voltage is increased in a circuit, a buzzer makes a louder sound and a motor turns more quickly.</p>	<p>3 Have obtained an understanding of the key domains of knowledge within physics and can use key concepts to make links between domains.</p>
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<p>Magnets can push other magnets away.</p> <p>Not all metals are attracted to magnets.</p>			<p>The surface on which an object rests affects how it slides.</p> <p>Magnets have a North or South pole. Unlike poles attract and like poles repel each other.</p> <p>Some metals are attracted to a magnet and are known as magnetic. Other materials are not.</p> <p>The strength of magnets vary and can be tested using the idea that magnetic forces act at a distance.</p>	<p>A switch can be added to a circuit to turn the component on or off.</p> <p>If there is a break in a circuit, a loose connection or a short circuit, the component will not work.</p> <p>Metals are good electrical conductors. Non-metals are generally electrical insulators except for graphite, human tissue and water.</p>	<p>applied to one part of the lever to lift the load at another point on the lever.</p> <p>A gear is a mechanism which consists of wheels with teeth that slot together. Gears change the direction of movement and the force required to make something move.</p> <p><u>Earth in space</u></p> <p>The main bodies that are found in space are the Sun, Moon, Earth and planets. They are all spherical.</p> <p>The Earth and other planets all orbit the Sun. The time taken is one year.</p> <p>The other planets of our solar system also orbit the sun at different distances and taking different times to complete one orbit.</p> <p>The Sun appears to move east to west in an arc across the sky from sunrise to sunset.</p> <p>Changes in shadows during the day can be explained by the changes in the position of the Sun.</p> <p>The Earth rotates on its axis and this causes day and night, the apparent movement of the Sun across the sky and changes in shadows.</p>		
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The Moon orbits the Earth every 28 days and rotates on its axis.

Early Learning Areas

UTW: Understanding the world involves guiding children to make sense of their physical world and their community
 UTW: Frequency and range of children's personal experiences increases their knowledge and sense of the world around them
 UTW: Foster their understanding of our culturally, socially, technologically and ecologically diverse world
 C&L- Language-rich environment is crucial.
 C&L: By commenting on what children are interested in or doing, and echoing back what they say with new vocabulary added, practitioners will build children's language effectively
 C&L: Through conversation, storytelling and role play, where children share their ideas with support and modelling from their teacher, and sensitive questioning that invites them to elaborate, children become comfortable using a rich range of vocabulary and language structures.

LKS2

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 change.
 Compare how things move on different surfaces
 Notice that some forces need contact between two objects, but magnetic forces can act at a distance
 Observe how magnets attract or repel each other and attract some materials and not others
 Compare and group together a variety of everyday materials 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.
 Identify how sounds are made, associating some 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.
 Identify common appliances that run on electricity
 Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
 Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
 Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
 Recognise some common conductors and insulators, and associate metals with being good conductors.

UKS2

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.
 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.
 Recognise that light appears to travel in straight lines
 Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
 Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
 Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
 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.

<p>Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.</p>	<p>4. Explore the natural world around them, making observations and drawing pictures of animals and plants.</p>	<p>Ask questions what they notice and observe in the world around them.</p> <p>Show curiosity about similarities and differences between living things and materials.</p> <p>Use what they have noticed or observed to answer questions.</p>	<p>Ask questions about how things are similar and different, materials' suitability and how things change.</p> <p>Begin to recognise that there are different ways to answer scientific questions, including naming things, sorting them and comparing them.</p> <p>Make more systematic</p>	<p>Suggest questions they could investigate.</p> <p>Learn the names of different types of enquiry.</p> <p>State what science they did to answer the question.</p> <p>Learn to use a data logger, stopwatch, weight scales and rulers.</p>	<p>Use a range of question stems.</p> <p>Answer questions poses by the teacher identifying the type of enquiry they have used to answer the question.</p> <p>Learn to use a thermometer.</p> <p>Use standard units for measurements.</p> <p>Uses senses to make detailed observations.</p>	<p>Learn to use a force meter.</p> <p>Measure liquids accurately using measuring cylinders.</p> <p>Make decisions about whether repeat readings are required to get accurate data.</p> <p>Pose further questions.</p>	<p>Recognise when further tests and observations are needed to answer questions.</p>	<p>4 Ask questions and make observations around the world using scientific knowledge.</p>
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		<p>Make observations using all their senses, using context specific vocabulary.</p> <p>Use magnifiers to look more closely.</p> <p>Make comparisons.</p>	<p>observations of features and changes.</p> <p>Take measurements using non-standard units and then cms.</p> <p>Learn that a thermometer is used to measure temperature.</p>	<p>Make observations using a digital microscope.</p> <p>Use standard units for measurements.</p> <p>Make systematic and careful observations.</p> <p>Identify similarities and differences they have observed in data they have collected first hand or from secondary sources. Relate to simple scientific ideas/processes learnt about.</p>				
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KS1

Asking simple questions and recognising that they can be answered in different ways
 Observing closely, using simple equipment
 Using their observations and ideas to suggest answers to questions

LKS2

Asking relevant questions and using different types of scientific enquiries to answer them
 Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
 Identifying differences, similarities or changes related to simple scientific ideas and processes

UKS2

Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

<p>Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings.</p> <p>Provides oral descriptions of what was done and what happened.</p> <p>Recognises similarities, patterns and differences in the findings and links these to the original question.</p>	<p>5. Discuss what they have found out including similarities, differences, patterns and changes in nature.</p>	<p>Use sorting hoops to group materials and objects using their own and given criteria.</p> <p>Use simple ID sheets to identify living things.</p> <p>Gather first hand data from a variety of sources.</p> <p>Record their observations in words and labelled pictures; simple prepared tables and pictograms; block</p>	<p>Select their own sorting criteria.</p> <p>Use observable features to classify living things using ID cards.</p> <p>Use prepared tables to classify living things and materials.</p> <p>Construct simple bar charts using templates.</p> <p>Add labels to diagrams.</p> <p>Identify patterns in their data.</p>	<p>Gather evidence from a range of sources including first hand observation and experimental data, and secondary sources of information to answer scientific questions.</p> <p>Use tally charts.</p> <p>Construct tables.</p> <p>Draw labelled diagrams with keys.</p> <p>Construct simple food chains.</p>	<p>Learn to use branching keys.</p> <p>Decide how to gather evidence to answer a scientific question.</p> <p>Become more systematic and accurate in data collection.</p> <p>Learn to draw a bar chart, labelling axes and choosing a scale with suitable intervals.</p> <p>Use symbols to represent an electrical circuit.</p>	<p>Research secondary sources to find answers to questions.</p> <p>Create tables to collect data.</p> <p>Draw and label line graphs, scatter graphs and bar charts with the variables on the correct axis, choose a suitable scale with equal intervals and plot data correctly.</p> <p>Draw labelled diagrams of mechanisms and structures.</p>	<p>Create branching keys with 4 or more items.</p> <p>Recognise how secondary sources can be used to answer questions that cannot be answered through practical work.</p> <p>Construct data collection tables.</p> <p>Select measuring equipment to give the most precise results including force meters with a suitable scale, ruler or tape measure.</p>	<p>5 Be able to gather, analyse data and articulate evidenced conclusions.</p>
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<p>Discusses, with support, how the experiment might be improved.</p> <p>Relates findings to everyday experiences.</p> <p>Identifies and discusses new knowledge and understanding.</p> <p>Communicates findings to others verbally and through drawings, photographs, displays and simple charts.</p> <p>Responds to questions about their investigation</p> <p>Demonstrates creative thinking by offering suggestions and solutions to everyday problems.</p> <p>Demonstrates reasoning skills by explaining choices and decisions</p>		<p>and paper strip bar charts.</p> <p>Use simple scientific language to describe their observations and answer questions.</p> <p>Use their data to recognise and rank differences.</p>	<p>Use data collected in enquiries to inform their answers to questions.</p> <p>Begin to develop explanations based on evidence collected and previous experience and knowledge.</p>	<p>Use scientific language in writing and orally.</p> <p>Make some decisions about how to record observations.</p> <p>Use different ways to report enquiry findings: posters, writing explanations, labelled diagrams, oral presentations, drama.</p> <p>Use prior knowledge or data to predict outcomes of tests.</p> <p>Use evidence collected in a range of methods and their current knowledge to formulate simple conclusions.</p> <p>Begin to evaluate effectiveness of tests.</p> <p>Refer to own data when answering questions.</p>	<p>Sequence flow charts.</p> <p>Learn to use Venn and Carroll diagrams.</p> <p>Make detailed observational drawings.</p> <p>Begin to make choices about how to report enquiry findings.</p> <p>Use appropriate scientific vocabulary consistently and accurately.</p> <p>Identify a simple pattern between two data sets.</p> <p>Use test results to propose solutions to problems.</p> <p>Use evidence to generate comparative statements.</p> <p>Begin to identify causal relationships.</p> <p>Use simple models to represent scientific processes.</p> <p>Use data collected and from secondary sources to answer questions.</p>	<p>Use test results gathered/knowledge acquired to make predictions.</p> <p>Use data gathered to identify causal relationships.</p> <p>Explain how to increase the accuracy and precision of measurements.</p> <p>Use key vocabulary accurately and consistently.</p> <p>Make decisions about salient and relevant data to present.</p> <p>Recognise there are many different ways to report findings: scales, charts, reports, graphs, charts, multimedia.</p> <p>Draw valid conclusions from data collected.</p> <p>Draw upon test data to construct an explanation.</p> <p>Use observations and test data to provide evidence to support or refute ideas or arguments.</p>	<p>Make decisions about whether further research is required.</p> <p>Construct and use a range of ways to record and sort data.</p> <p>Draw circuit diagrams using recognised symbols.</p> <p>Analyse scatter graphs.</p> <p>Recognise that in a pattern seeking enquiry it is important to have as much data as possible.</p> <p>Use scientific language to communicate findings from a range of enquiries.</p> <p>Use and evaluate models to represent systems and processes.</p> <p>Evaluate methods uses, control of variables, precision of measurements, credibility of secondary sources.</p> <p>Justify trust in data.</p> <p>Evaluate limitations of data collected from secondary sources.</p> <p>Explain why scientists do not always agree.</p> <p>Differentiate between fact and opinion.</p>	
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KS1

Identifying and classifying

Gathering and recording data to help in answering questions.

LKS2

Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
 Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
 Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
 Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
 Using straightforward scientific evidence to answer questions or to support their findings.

UKS2

Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
 Using test results to make predictions to set up further comparative and fair tests
 Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
 Identifying scientific evidence that has been used to support or refute ideas or arguments.

<p>Explores and observes through play.</p> <p>Asks questions arising from play activities.</p> <p>Makes simple predictions of what might happen.</p> <p>Makes suggestions about what to do to answer the selected question.</p> <p>Carries out practical activities within a variety of learning environments</p> <p>Discusses obvious risks and takes appropriate steps to protect themselves and others.</p> <p>Uses their senses to acquire information.</p> <p>Measures using simple equipment and non-standard units.</p>	<p>6.To ask why questions and choose the right resources to carry out their own plan.</p>	<p>Follow simple instructions to carry out simple comparative tests.</p> <p>Use practical resources provided, including water droppers.</p>	<p>Learn to only change one thing in a comparative test to make sure it is fair.</p> <p>Begin to plan simple tests independently.</p> <p>Learn how to set up an observation over time enquiry.</p> <p>Predict a result using prior experience and knowledge.</p>	<p>Plan observing over time enquiries, making some decisions about what observations and/or measurements they will need to make and when.</p> <p>Plan simple comparative tests, making some decisions about what to change and what to measure.</p> <p>Make some decisions about which practical resources to use.</p>	<p>Use the terms variable and control variable.</p> <p>Use a fair test planner to identify variables to change, measure and keep the same to answer a question.</p> <p>Plan and carry out a fair test.</p> <p>Plan and carry out a comparative test.</p> <p>Follow instructions to carry out a pattern seeking enquiry.</p>	<p>Identify independent and dependent variables and use these to generate fair and comparative test questions.</p> <p>Identify the important variables to control when carrying out a comparative or fair test.</p> <p>Justify selection of enquiry type.</p>	<p>Make planning decisions about where and how to collect information (recognising and controlling variables, deciding what observation or measurements to make over time and for how long, using suitable samples to identify patterns).</p> <p>Ask and write enquiry questions.</p>	<p>6 To follow and design scientific enquiries.</p>
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KS1

Performing simple tests

LKS2

Setting up simple practical enquiries, comparative and fair tests

UKS2

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary