

Year/Term	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 1	The human body and the senses Observing changes in the season	Identify and name common animals - fish, mammals, amphibians, reptiles, birds and mammals	Observe changes in the season - Winter	Identify carnivores, omnivores, herbivores	Materials Comparing and grouping materials on simple properties	Identifying wild and common plants, deciduous and evergreen Basic structure of a plant
Year 2	Comparing living and dead things, understanding habitats, naming a variety of plants, animals their habitats and their micro-habitats. GROWTH AND SURVIVAL			Exercise, eating the right foods and hygiene	Materials Manipulating solids by squashing, bending, twisting and stretching.	Observe and describe how seeds and bulbs grow into mature plants
Year 3	Skeletons of humans and animals and their movement	Rocks and soils made of organic matter	Light and shadow	Forces	Plants Identifying and describing parts of flowering plants: roots, stem/trunk, leaves and flowers	Nutrition
Year 4	Sound Air resistance	Digestive system		Comparing materials SOLIDS, LIQUIDS and GASES	Food chains, producers, predators and prey Classifying and grouping animals using labels and mapping	Electricity Basic circuits
Year 5	Forces	Life cycles of animals and humans	Earth and Space	Properties and changes to materials		Reproduction in plants and animals
Year 6	Human systems and health	Electricity Buzzers, switches, lamps		Light	Evolution	Classification of plants and animals

observe changes across the four seasons (2) observe and describe weather associated with the seasons and how day length varies. (3) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (4) gathering and recording data to help in answering questions.

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To be able to identify, name and label body parts.	Children will identify and name several body parts and identify their location on their own bodies. They will then label and/or draw diagrams.	Can children identify various body parts? Can children name various body parts? Can children label various body parts?	
2	To explore what parts of our bodies we use for different activities.	Children will consider which parts of their body are used during a variety of different activities. They will then describe how body parts are used, or how they move.	Can children name various body parts? Can children identify where various body parts are? Can children describe which body parts are used for different activities?	
3	To find out about the five senses, in particular the sense of sight.	Children will consider why sight is an important sense, and conduct tasks where they will have to use their own sense of sight.	Do children know what the five senses are? Do children know that eyes are used for seeing things? Can children use their eyes to look carefully at pictures and objects?	
4	To explore the sense of touch.	Children will consider that their whole bodies can sense touch, but that we mostly use our hands to feel things. They will then feel and describe a variety of objects.	Can children name the five senses? Do children know that our whole bodies can use the sense of touch? Can children describe how a variety objects feel using appropriate vocabulary?	
5	To explore the sense of smell.	Children will consider what our sense of smell is used for and, optionally, conduct a smell investigation.	Do children know what the five senses are? Do children know that the nose is used for the sense of smell? Can children identify use their noses to identify smells?	
6	To explore the sense of taste.	Children will think about the different tastes of foods and use a range of vocabulary to describe taste. They may either sort and describe given images of foods, or conduct a taste investigation.	Do children know that we use our mouths to taste things? Can children use appropriate vocabulary to describe different flavours? Can children express preferences about foods they like and dislike?	
7	To explore the sense of sound.	Children will explore ways in which we use our sense of sound. They may then either produce information text to show what they have learned during this, and previous lessons, or conduct a sound investigation.	Can children name the five senses? Can children identify which part of the body each sense uses? Can children listen carefully to sounds to identify them?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To be able to identify and name a variety of common animals.	Can children complete a vertical relay on the pets they have at home? Children will identify, name and describe a variety of common animals kept as pets. Children will also be able to label a pet and explain what they need to survive at home.	Can the children identify various pets? Can the children name various pets? Can the children describe various pets?	
2	To be able to identify and name a variety of UK mammals.	Children will identify a variety of mammals and compare and describe some of their features. Children will be able to explain what is common about all these animals. Children should be able to define what a mammal is. Can children sort mammals into mammals found in the UK and not in the UK?	Can the children identify various mammals? Can the children name various mammals? Can the children compare various mammals?	
3	To be able to identify and compare a variety of common UK birds and reptiles.	Children will compare the characteristics of a variety of birds and reptiles, then answer questions or describe animals in their own words. Can children sort animals into birds and reptiles? Children should be able to define what a reptile is and what a bird is. Children should be able to name and identify various types of birds that are part of the UK.	Can the children identify and name various birds? Can the children identify and name various reptiles? Can the children compare reptiles and birds?	
4	To be able to identify and compare a variety of common UK fish and amphibians.	Children will consider similarities and differences between some fish and amphibians. They will also learn about some fish/amphibian life cycles and describe what they have learned in their own words.	Can the children identify and name various fish? Can the children identify and name various amphibians? Can the children compare fish and amphibians?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To recap my understanding of the different seasons.	To describe the weather and compare it to weather at different times in the year. Children create a comparison grid of all the seasons they know of so far and how the weather changes and what months these changes happen.	Can children name different types of weathers? Can children name the seasons? Can children discuss changes that happen at different times of the year?	
2	To find out about Winter and how it is different from Autumn.	Children go on a school walk to find trees. Compare photographs from Autumn to Winter and discuss how the trees have changed. Children discuss why some trees still have green leaves. Children discuss what plants may or may not be growing on the ground and write down their observations. Children also take temperature readings daily and compare these to Summer temperatures.	Can children discuss their observations about trees? Can children compare their findings? Do children know why some trees have leaves in the Winter?	
3	To find out which animals in England are affected by the Winter.	Children will consider ways in which the changing conditions of the Winter affects the lives of animals, focussing on the behaviour of robins and mice. They may either undertake sequencing activities or learn about other behaviours of different animals. Can children find out about animals that like extreme cold weather?	Can children explain how the seasons affect animals? Can children give examples of different animals that are affected by Winter?	
4	To find out about how humans are affected by the seasons.	Children will compare clothing and behaviour of humans during Summer and Winter. Children will explore in detail the ways in which clothing may change, or what food is available in the Winter. Children will learn about what is in season (vegetable soup)	Can children explain how the weather affects what we wear? Can children explain what food grows in the Winter?	
5	To find out about the day length in the Winter and why this is so.	Children will think about the length of days and nights in the Winter. Children will begin to understand why we have shorter days and longer nights in the Winter. Children will begin to think about the position of the Earth to the Sun using roleplay and hats - tilting to and from the Sun to show Summer and Winter seasons.	Can children identify which season has longer days? Can children talk about what happens to night and day in the Winter?	
6	To analyse basic data about the Winter.	To compare pictograms and charts about the weather and gather information about the Winter reading data. Children will create their own charts based on how many layers people are wearing or how many children wear scarves and coats or gloves during playtime etc.	To gather weather data over a period of time.	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To use my prior knowledge to distinguish an object and identify what materials it is made from.	Give children freedom to categorise objects. Present children with an arrangement of objects ranging from everyday classroom to appliances, plastic bottles etc. Create an open ended task where children sort objects into categories of their choosing. Lead children to think about what they are made from. Introduce materials. Children then learn what materials are, identify common materials and describe some of their uses.	Can children write about the uses of different materials? Can children write questions about what they want to learn about materials? Do children know where materials come from? Can children distinguish an object and then discuss the material of which it is made?	
2	To be able to describe materials according to their properties.	Children will use words such as: soft, smooth, hard, bendy, malleable, flexible, rigid, strong, breakable and create photographic diagrams of categories. Challenge children to use a venn diagram to categorise objects i.e. Which objects are hard and soft? Where would you place a rubber? Encourage children to think about which objects are more versatile than others. Discuss this is important for their uses and purpose.	Can children use a variety of words to describe what materials are like? Can children match materials to their properties? Can children group objects and materials according to their properties in two or three different ways?	
3	To be able to describe why some materials suit certain objects better than others.	Show children the tea pot made of chocolate. A house made of marsh mellow. A sun hat made of lead. Discuss why these materials are inappropriate for use. Children to investigate the use of different materials to create a chair for bear. Create a criteria for success. What makes a successful chair? What materials can we use? Which are the most long lasting?	Can children investigate the appropriate materials for creating a chair for bear? Can children identify inappropriate materials? Can children make predictions?	
4	To carry out an experiment to find out which materials are waterproof.	Children will devise methods of testing materials to determine whether or not they are waterproof. Children learn to make paper boats. Can they create a waterproof boat for the lego men? Which material lasts the longest in the water? Children to test foil, paper, card, newspaper. Discuss the use of fair test and make predictions.	Can children make suggestions for how to test which materials are waterproof and which aren't? Can children test a variety of materials to see which are waterproof and which aren't? Can children draw conclusions from their experiments?	
5	To re-test an experiment based on their conclusions.	Discuss how they could make a material waterproof? What would they need to do? Introduce acrylic paint, use of plastic, cello tape, sealant. Test which is the best sealant to paper. Create a boat and test which is the best material for making something water proof.	Can children make suggestions for how to test which materials are waterproof and which aren't? Can children test a variety of materials to see which are waterproof and which aren't? Can children draw conclusions from their experiments?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To find out what a plant is.	Show children different types of plants. Ask the broad question - what makes a plant a plant? Children write down their own definition of what a plant is based on discussion. Children to write questions about plants, trees, flowers and seeds. What do they want to find out about plants and growing things?	Can children identify plants from non-plants? Can children describe the features of a plant? Can children begin to identify features that are similar and different between plants?	
2	To compare common garden plants in England and Spain.	Children to look at plants from England and Spain. Discuss the differences. Children to compare photographs, types of plants, leaves, flowers, height, shapes. Discuss the weather in both countries. Children draw conclusions as to why certain plants look different? What affects them? Children to sort plants from England and Spain and label them based on descriptions.	Can children identify types of leaves on different plants? Can children discuss how weather is suitable to different types of plants? Can children identify similarities and differences between plants?	
3	To identify wild flowers in England and the desert.	Discuss the differences between climates through photographs and images. Discuss the rich earthy greens of England, the weather and rainfall. Compare this to desert conditions and discuss the shape and sizes of wild plants in England and the desert. Children draw conclusions about what plants need to grow.	Can children name some wild plants? Can children describe the plants and how they look? Can children say which plants come from England and not?	
4	To identify and describe a range of trees.	Look at leaves and shapes of leaves. Children have a leaf finder card and go out the school grounds to the local park, searching for trees the leaves belong to. Children come back to label and describe the heights, trunks, colours of trees they have seen. Compare and contrast trees in the local area.	Can children name some trees? Can the children describe the features of different trees? Can children use the terms "evergreen" and "deciduous"?	
5	To identify the different parts of a plant.	Children to examine different plants and flowers using magnifying glasses. Children to draw whole plants labelling roots, stems, leaves etc. Children to then create a large collage poster of that plant - labelling it's parts and finding out about what makes that plant grow. What conditions it needs. Where would you find it in the garden? Shade? Sun? Partial?	Can the children name the main parts of a plant? Do the children know parts of the plant have different functions? Can the children identify similarities and differences between the parts of different plants?	
6	To make observations of growing plants.	Children to keep an "evernote" or "ibook" on their ipads - tracking the growth of a plant from seed to fruit. They will describe the changes and identify how different plants have grown over time. Children will grow a variety of beans/flowers. Each table group to compare the rates of how plants grow.	Do children know that plants grow? Can children name the main parts of a plant? Can children describe and make observations about how plants change?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To be able to identify things that are living, things that are dead and things that have never been alive.	Can children define what living means? Can they explain what makes something living? Can they explain what dead means? Can children write their own definitions? Present children with images of different things and objects - how can they categorise them based on what they have discussed? Can they explain why a water bottle was never alive or dead?	Can children identify living things? Can they identify things that are living and have died? Can children identify things that have never been alive?	
2	To understand that living things need to live in suitable habitats.	Children will learn what a habitat is and what animals and plants need to survive in them. They will then identify and group animals by their habitat. Why does a fish not live in a tree? Why does an owl not live in the sea? What do they need to survive? Why does a human being not live in a volcano?	Do children know what a habitat is? Do children know that animals and plants need to live in habitats they are suited to? Can children match animals and plants to suitable habitats?	
3	To explore the plants and animals that live in a seaside habitat.	Children will identify features of seaside habitats and discuss which plants and animals might live in it, and where. They may then both identify and name a variety of organisms, or sort organisms into those found in seaside habitats, and those found in other habitats.	Can children identify some animals in a seaside habitat? Can children identify some plants in a seaside habitat? Do children recognise how animals and plants in a seaside habitat are linked together?	
4	To be able to explore plants and animals in an unfamiliar habitat.	Children will identify characteristics of animals which give clues about the habitats they live in. They will then discuss what a variety of habitats are like, then either describe what they provide for the organisms that live in them, or how organisms are adapted to suit their habitat.	Can children name some different types of habitats? Can children describe different types of habitats Can children compare habitats and the animals and plants that live in them?	
5	To be able to explore and describe a micro-habitat.	Children will learn about micro-habitats and the organisms that live in them. They may then either explore micro-habitats outside, or describe and categorise given sets of mini-beasts according to some of their characteristics.	Do children know what a micro-habitat is? Can children name some micro-habitats? Can children identify and describe some of the animals that live in micro-habitats?	
6	To explore food chains in a habitat.	Children will begin to understand how organisms in a habitat are dependent upon one another, and that these dependencies can be shown as food chains. They may then either complete given food chains, or try to make food chains from a given set of organisms.	Do children know that animals and plants in a habitat are dependent on each other for food? Can children construct a simple food chain? Can children construct food chains that include humans?	

	Lesson Objective	Overview	Assessment questions	Resources /vocabulary
1	To be able to identify a variety of materials and sort them according to a variety of criteria.	Children create their own criteria to categorise materials. Children to justify how they have grouped the materials. Children think about how they group items based on their similarities. Can children group them based on properties such as breakable, malleable, transparent, rigid, bendy etc. Use a host of everyday objects, classroom objects, fabric, kitchenware, homeware etc.	Can children identify and name a variety of different materials? Can children organise a variety of materials into groups according to given criteria? Can children organise a variety of materials into groups according to their own criteria?	
2	To be able to identify natural and man-made materials.	What do natural and manmade mean? How would you define it? Which of these items are natural? How do you know? Children will identify some natural and man-made materials and describe them, then continue to find out about, sort and describe a range of materials. Discuss - sand - glass, clay - bricks, straw - basket, bottles - plastic	Can children recognise that some materials are naturally occurring and some are not? Can children name some naturally occurring materials? Can children identify objects that are made from naturally occurring materials?	
3	To identify that some materials can change shape by squashing, bending, stretching and twisting, and others can't.	Children will squash, bend, twist and stretch a range of materials, then predict how other materials might behave. They will also conduct investigations, recording their findings. What questions can children ask about different types of materials? How can they begin to test them? What conclusions will they draw from their findings?	Do children know that some materials change shape when you bend, squash, stretch or twist them? Can children identify some materials that can change shape temporarily? Can children identify some materials that cannot change shape at all?	
4	To identify the suitability of metal and plastic for a variety of purposes	Children will look at a variety of objects made using metal or plastic and consider why each material has been used. They will go on to sort and describe a range of plastic and metal objects. Why would you take plastic cutlery on a picnic for 40 people and not metal cutlery? Why would a metal balloon be inefficient? Why would a chocolate plate not be suitable for purpose? Why would a metal bed not be the right material?	Do children know that metal and plastic are different materials? Can children identify some different things metal and plastic are used for? Can children explain why a particular material is chosen to be made into an object.	

5	To identify different products that can be made from wood and their features and purposes.	Children will learn about how trees are turned into materials we use. They will then either describe how paper is made in their own words, or make and test paper models. Children make their own paper. http://tinkerlab.com/how-to-make-paper/	Do the children know that paper and cardboard are made from wood? Can the children identify features of wood, cardboard and paper? Can children explain the advantages and disadvantages of using different wood products?	
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	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To understand that there are many different types of seeds.	<p>What is a seed? What is it for? What does it need so that it can change? What do children already know about seeds.</p> <p>Children to observe and compare the differences in seed types through a magnifying glass. Children to match seeds to seed packets and find out what that seed needs to grow. What conditions will that seed need to make a plant?</p> <p>KWL - What do they know already about plants? What do they want to know?</p> <p>Generate as many questions about growing plants and plant life as they can think of.</p> <p>Children plant a variety of seeds on partners</p>	<p>Do the children know seeds grow into plants?</p> <p>Can the children name any plants that grow from seeds?</p> <p>Do the children understand seed packets tell us what seeds need to grow?</p>	
2	To understand that plants can be grown from bulbs.	<p>Children to create a recount in a plant diary using a photo from the previous lesson. Watch video of T planting a seed. Children to write simple sentences about what they learned and how they planted a seed.</p> <p>Introduce the concept of a bulb. Children will learn about bulbs: their large food source, and the times of year at which they grow. They may then either undertake a sequencing activity to show bulb growth, or plant bulbs.</p> <p>Children to create a class calender of when to plant certain seeds and bulbs. Matching flowers to their seeds and bulbs. When they should be planted and when they flower. Discuss length of growing time.</p>	<p>Do the children know plants grow from seeds and bulbs</p> <p>Can the children name any plants that grow from bulbs?</p> <p>Can the children explain why some plants need to grow from a bulb?</p>	
3	To be able to explain why and how seeds are dispersed.	<p>Continue to keep a growing diary of the seed the children planted.</p> <p>Children will learn about fruits: The seeds they contain and some ways in which they are dispersed. They may then either study a variety of fruits or explain how seeds are dispersed in their own words.</p> <p>Children learn the difference between a fruit and a vegetable. Children to explore cutting open different fruits and finding their seeds i.e. butternut squash, watermelon, cucumber,</p>	<p>Can children explain why seeds need to be dispersed?</p> <p>Can children give suggestions as to why fruits have so many seeds?</p> <p>Can children describe some of the ways in which seeds can be dispersed?</p>	

		lemons, oranges, apples, pears, bananas - compare to exotic fruits.		
4	To plan, carry out and evaluate an investigation into the conditions that affect germination.	Children will learn about germination, and then devise tests to determine the various conditions seeds need to germinate. They may then either conduct an investigation or study or interpret a given set of results.	Can children ask questions that can be investigated scientifically and suggest how to answer them? Can children plan and carry out an investigation, making sure it is a fair test? Can children evaluate their results and draw conclusions?	
5	To observe and describe how a plant changes as it matures.	Referring back to prior learning, children will consider how plants change over time. They may then either undertake sequencing activities, or describe stages in the growth of their own plant. Children refer to own stills from plant growth - create detailed drawings with labels and descriptions (watercolour and pencil) - create a timeline story board of scientific drawings and descriptions with measurements and observations.	Can the children explain how their plant has changed over time? Can the children use scientific words to explain each stage of the plants development? For example 'germination', 'growth', 'leaves', 'stem', 'shoots', 'roots'? Do the children understand what a plant needs to grow?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To identify that humans get the nutrition they need from what they eat.	<p>What is nutrition? How does a person stay healthy? Discuss what would happen if you put fried chicken oil in the fuel tank of your car.</p> <p>Children to discuss and explore what they already know about healthy eating and healthy bodies. Children to create open ended questions about what they want to learn about health, movement and bones.</p> <p>Children to sort food into their own criteria - why have they chosen this? Take photos and write about it.</p> <p>How do humans get their nutrition? What balance do they need?</p>	<p>Do children know that humans get nutrition from what they eat?</p> <p>Can children identify and group a variety of foods?</p> <p>Can children recognise foods for growth and foods for energy?</p>	
2	To identify that a balanced diet is needed in order to stay healthy	<p>Children will continue to learn about the need for a varied, balanced diet by looking at food pyramids and examples of healthy meals (and planning their own). They will also consider ways in which people with dietary restrictions can have a balanced diet.</p> <p>What affect does an unbalanced diet have on the body? How can we investigate this?</p> <p>Children generate ideas for completing and investigation</p>	<p>Do children know that humans need to eat to grow and move?</p> <p>Do children understand what is meant by the term 'balanced diet'?</p> <p>Can children identify and describe which food groups we should eat most of and which food groups we should eat least of?</p>	
3	To carry out an investigation and making it a fair test.	<p>Children to test their hypothesis that too much sugar is bad for your teeth. Children to experiment how long it takes for fat and water to boil? If you consume this amount of fat in your diet over a period of time what will happen to your body?</p>	<p>Can children complete a fair test?</p> <p>Can children draw their own conclusions from their findings?</p>	
4	To explore human and animal skeletons.	<p>Children will learn about bones in humans and other animals. They will then either label skeleton diagrams, or identifies similarities between the skeletons of a variety of animals.</p> <p>Children to measure different parts of the body and explore which parts of the body have the longest bones. Children compare their conclusions to actual facts. How are animal and human skeletons different or the same? Comparison of images</p>	<p>Do children know that animals with a skeleton are called vertebrates?</p> <p>Can children identify different bones in the human skeleton?</p> <p>Can children compare bones in animal and human skeletons?</p>	
5	To find out about how the skeleton supports and protects the body and to investigate how invertebrates are supported.	<p>Children will learn about the functions of the skeleton in vertebrates, and how some invertebrates move and are protected in different ways.</p> <p>Children to discover how an invertebrate and vertebrate protect their organs. Children to create labelled diagrams with clear descriptions.</p>	<p>Do children know the difference between vertebrates and invertebrates?</p> <p>Do children know that internal skeletons support and protect the body?</p> <p>Do children know how the bodies of invertebrates support and protect them?</p>	
6	To find out what muscles are and how skeletal muscles help us to move.	<p>Children will continue to learn about how the body moves, focussing on the ways muscles and bones work. Children to learn about joints, sockets, knee cap, hinge</p> <p>Which parts of your body rotate? What joint would that be?</p> <p>How do the shapes of your bones help your muscles to move?</p>	<p>Do children know that muscles help us move?</p> <p>Do children know that muscles work in pairs to move different parts of the body?</p> <p>Do children know that some animals have strong muscles for particular purposes?</p>	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To be able to group rocks according to certain criteria.	Hide rocks under fabric - place them in an interesting way. Children have to think about what could be under the fabric. What questions could they ask to find out what is there? Reveal the rocks. What do children know about rocks already? Children write down known facts. What do children want to find out about rocks? Children generate as many questions as they can think of. Children will learn where rocks come from, and then consider differences between naturally occurring rocks and man-made objects which are similar to rocks. Give the children the opportunity to group the rocks stating their own criteria in a Carroll diagram. Discuss how they can find out why these rocks are categorised in this way.	Can children suggest ways of grouping rocks according to their characteristics? Can children observe and compare rocks, and put them into different categories? Can children justify their choices and explain their decisions?	Rock samples Images of rocks PBL books
2	To be able to plan, carry out and evaluate experiments to compare rocks.	Children will start to learn about erosion. They will also consider how different rocks may be tested to determine how quickly they erode and whether they are permeable. Following this, children will conduct practical erosion/permeability investigations. How can they test the rocks?	Do children know what the terms 'erosion' and 'permeable' mean? Can children plan and carry out an experiment to compare rocks based on certain characteristics? Can children evaluate their results and draw conclusions?	
3	To identify rocks that are used for particular purposes.	Children to study images, objects and a school walk to find man-made and natural rock. What types of rock are things made from? i.e. kitchen surface, church building etc. Why are these types of rocks used and why?	Can children use a variety of sources to find out information about rocks and their uses? Can children organise the information they have found out? Can children present the information they have found out clearly?	
4	To understand rock formations and types of different rocks.	Children to understand the role of volcanoes in rock formation. Children to learn about igneous, sedimentary and metamorphic rocks. They will learn about the rock cycle by using white and dark chocolate. They will be able to use appropriate vocabulary to describe the process of how rocks are formed.	Do children know what a volcano is? Do children understand rock formation through the rock cycle? Can children describe what an igneous, sedimentary and metamorphic rock is? Can children group rocks according to their types?	
5	To explore soil and how it is formed.	Children will learn about soil: how it is formed and its uses. They will also study different types of soil. Following this, children will study and describe a variety of soil samples.	Do children know that soil is made up of rocks and decaying organic matter? Do children know that there are different types of soil? Do children know that there are different layers of soil?	
7	To explore what fossils are and how they are formed.	Children will learn about how fossils are formed, then either describe this process in their own words or conduct a practical, 'fossil-making' activity.	Do children know that rocks move in a continuous cycle? Do children know what a fossil is? Can children explain how fossils are formed?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To recognise that we need light in order to see.	Children will learn that darkness is the absence of light, and that without light we cannot see. They will then identify, describe and sort a variety of light sources.	Do children know that we need light in order to see things? Do children know that dark is the absence of light? Can children identify a variety of light sources?	
2	To explore the Sun as a light source and identify the difference between night and day	Children will learn about some differences between night and day, including starting to understand how the Sun rises and sets. Children will produce labelled diagrams about night and day, the Earth position in relation to the moon and sun. Children should clearly be able to explain night and day using vocabulary such as orbit, earth's axis, seasons and tilt. Children can also act out being the Earth, Sun and Moon.	Can children define the difference between night and day? Do children know why the Sun rises and sets each day? Do children know that we need light to see and that darkness is the absence of light?	
3	To investigate what shadows are and why they are formed.	Children will share their ideas about how objects could be tested to determine whether or not they will make a shadow. They may then either test their ideas, or explore the way shadows are created, using shadow puppets.	Do children know that shadows are formed when light is blocked? Do children know the difference between objects that are transparent, translucent and opaque? Can children explore shadows using torches and express their findings?	
4	To investigate how shadows behave.	Children will continue to learn about how shadows are created, then conduct practical shadow investigations where they will predict, test and draw/ write to show their findings.	Do children know that shadows are formed when the light from a light source is blocked by a solid object? Can children use simple equipment to explore how shadows behave? Can children record findings using drawings and diagrams?	
5	To investigate how the size of shadows change throughout the day.	Children will discuss and predict what will happen to a shadow cast by a stick in sunlight throughout the day. They may then conduct a shadow investigation and present their findings using bar graphs.	Can children explain why shadows created by the Sun change position during the course of a day? Can children plan and carry out an investigation? Can children find patterns in the way the size of shadows change?	
6	To explore how light is reflected from surfaces.	Children will learn that some surfaces reflect more light than others. They may then either identify and describe a range of reflective surfaces, or conduct a reflection investigation using mirrors.	Do children know that light travels in a straight line? Do children know that we need light in order to see? Do children know that we see when light is reflected from a surface?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To explore what forces are and notice that some forces need contact between two objects.	Children will learn and describe what a force is. They will identify pushing and pulling actions in photographs, distinguishing between the two and describing which direction the forces are acting in. Children will identify push and pulls working in different scenarios.	Can children explain what a force is? Do children know that some forces need contact between two objects? Can children identify pushes and pulls and explain the forces in action?	
2	To compare how things move on different surfaces.	Children will find out what a forcemeter is and recognise that forces are measured in Newtons. They will practise reading the scales on forcemeters before carrying out an investigation to measure whether the same objects needs the same amount of force to be pulled along different surfaces.	Do children know that forces can be measured in newtons using a forcemeter? Can children set up and carry out an investigation to explore how objects move on different surfaces? Can children draw conclusions from their observations?	
3	To explore how magnetic forces work.	Children will learn that some forces do not need contact between objects, including gravity and magnetism. They will then find out what magnets are and how they work before testing how magnets behave when they are put together.	Do children know that there are forces between magnets and that don't need contact between two objects? Can children record observations of magnets? Can children make generalisations about what happens when magnets are put together?	
4	To be able to identify magnetic materials.	Children will recap how magnets behave when they are put together before testing a variety of objects to see if they are magnetic. Children will make predictions based on their prior knowledge then carry out an investigation to check if their predictions were correct.	Can children make and test predictions about whether materials are magnetic or not? Can children make careful observations? Can children group objects on the basis of whether or not they are magnetic?	
5	To investigate uses for magnets.	Children will recap different magnetic materials and make generalisations about which materials are not magnetic. They will then find out about a variety of uses for magnets, including medical equipment, credit cards and recycling. There is also the chance to carry out their own research to find out about different uses for magnets.	Can children name some uses for magnets? Can children use a variety of sources to find out about the different uses of magnets? Can children present the information they have found in an appropriate way?	

3 Term 5

i. identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers ii. 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 iii. investigate the way in which water is transported within plants

	Lesson Objective	Overview	Assessment questions	Resources/ vocabulary
1	To set up an enquiry to test our theories on what plants need to grow and thrive.	<p>Rolinka the alien wants to find out how to grow plants. How would you devise a line of enquiry based on her question: What is essential for plant growth?</p> <p>Children generate questions and separate them into fact finding questions and investigating questions. Children develop an understanding of how ask open ended questions and create a plan of how to investigate some of these questions over the next few lessons.</p> <p>Use the BBC linked videos to think about what is essential for plant growth. How can we investigate what is essential?</p> <p>Divide the class into 6 roughly equal mixed ability groups and give each a card. Explain that each group will help Zinnia by setting up an investigation to find how important (or unimportant) their requirement is in the growth of healthy, strong seedlings. As it would be hard for us all to work on the investigation at the same time, half the groups will set up their investigation whilst the other groups do some research into plants. Then we will swap round.</p>	<p>Can children name the basic parts of a plant?</p> <p>Can children create questions about how to investigate plants?</p> <p>http://www.bbc.co.uk/education/clips/zc_tmhyc - plant growth</p>	
2	To identify and describe the functions of the roots of flowering plants.	<p>Children make predictions and write definitions of what they think the function of roots are. What do they think the correlation between root and plant are? Children will measure and investigate root length of different plants in order to discuss types of roots, length of roots and heights of plants. Children will observe images of tree roots and trees and discuss the functions of roots and why roots are important.</p>	<p>Can children identify roots and seed attached to a plant?</p> <p>Children can explain the functions of the roots?</p>	
3	To investigate the way in which water is transported within plants	<p>Children will learn how water, absorbed by the roots is distributed around the plant via the stem. They will then conduct experiments where the capillary action in plant stems can be observed.</p>	<p>Can children explain where plants get their water from?</p> <p>Can children name the parts of the plant that transport water?</p> <p>Can children plan and carry out simple investigations? Can children draw simple conclusions?</p>	

4	To identify and describe the functions of leaves in flowering plants.	Children will start to learn how plants make their own food using air and sunlight. They will then either describe parts of this process in their own words, or plan and conduct an experiment to show the importance of light for plant growth. Children will understand how to use the terms photosynthesis, carbon dioxide, oxygen	Can children say what plants need to produce their own food? Can children explain the function of leaves in flowering plants? Can children start to explain some stages in the life cycle of flowering plants?	
5	To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Children will start to identify the parts of a flower, and how pollination occurs. They will then continue to identify and label the parts of a flower by drawing diagrams or dissecting flowers. Children will learn through producing a role play. http://www.bbc.co.uk/education/clips/znvfb9q - seed dispersal	Can children name the main parts of flowers? Can children describe the functions of the main parts of flowers? Are children able to describe one of the ways in which flowering plants reproduce? Do children know how and where seeds are formed in flowering plants?	
6	To explore some of the ways in which flowering plants disperse their seeds.	Children will learn how the ovaries of flowering plants grow to form seeds, and how they may be dispersed in a variety of ways. They will then either continue to study in-depth some ways in which seeds are dispersed, or identify seeds found outside. http://www.bbc.co.uk/education/clips/znvfb9q - seed dispersal	Can children explain why flowering plants need to disperse their seeds? Can children describe some ways in which seeds are dispersed? Can children identify how seeds are dispersed based on their appearance?	
7	To understand the structure of seeds and their importance as a food source.	Children will learn about the structure of seeds and how plants grow from them. They will then either taste and compare seeds, or make seed cake bird feeders http://www.bbc.co.uk/education/clips/zctmhyt - seed growth video	Can children name the parts of a seed and describe their functions? Can children identify the parts of a seed? Do children know why seeds are an important food source for animals?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.	Children will consider what weight is, and how the impact caused by falling objects can vary, depending on their size, shape, mass, and the height they fall from. How can an aeroplane defy gravity? Children to generate questions and create explanations about force and their understanding of pushes and pulls to explain how an aeroplane flies.	Can children explain why objects fall towards the centre of the Earth? Do children understand the causal link between the mass of an object and the amount of force with which gravity acts on it?	
2	To identify the effects of friction acting between moving surfaces.	Children will learn about what friction is and some ways in which it can be measured. They will also identify instances of high and low friction and conduct friction investigations. Children discuss their understanding of friction by observing images that investigate push and pull. Children will test the friction of different surfaces causing an object to move with ease or difficulty. Children will take the readings of a forcemeter connected to a container and see at what force the object starts to move across the surface. What kind of surface will be needed for a runway for an aeroplane?	Can children define friction? Do children know that friction can be useful and give some examples? Can children carry out an investigation, making sure that it is a fair test?	
3	To identify and explain the effects of air resistance.	Children will learn about ways in which air resistance affects moving objects, then plan and conduct investigations where they will determine how air resistance affects falling objects. Children will learn about surface area and materials that create air resistance. Children run outside with thick card in front of them on a windy day - why was it easier to run without it? Discuss using the idea of forces. Children create their own parachute experiment.	Do children know that air resistance is a force that slows objects moving through the air? Can children plan, carry out and assess experiments to investigate air resistance? Can children draw conclusions from their investigations?	
4	To identify and explain the effects of water resistance.	Children will learn about water resistance and how it affects objects moving through water. They will then conduct water resistance investigations. Children begin to think about the shape of fish and boats to discuss why it is easier for them to move through water than humans. Children test the shape of plastercine falling through water and discuss how these cause water resistance.	Do children know that water resistance slows an object moving through water? Can children plan and carry out an experiment, making sure it is a fair test? Can children identify trends in results and draw conclusions?	

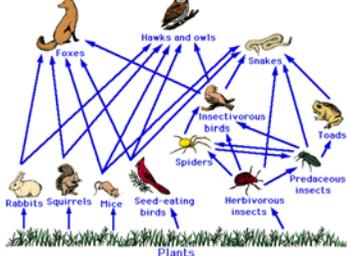
	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To begin to understand the process of digestion in humans.	Generate questions and understand what children already know about digestion and how their food turns into nutrition to help them grow. Children to label parts of an outline of a body and explain what they already know about how they grow and how food helps this process. Generate questions to understand more about the digestive system.	Can children explain why they need food? Can children explain what nutrition is? Can children explain that they have a digestive system?	
2	To understand how our teeth start the process of digestion.	Children explore and discuss the types of teeth in the mouth. Children create vocabulary to explain what the teeth do. Can they name and label the functions of the different types of teeth? How does this help nutrition? How does this help the rest of the digestive system? Why do we need to chew and breakdown our food?	Can children identify the different types of teeth? Can children explain the functions of the different types of teeth and why this is important for digestion?	
3	To compare the teeth of animals and humans.	Children begin to understand that different types of animals have different digestive systems. Children are able to look at skulls and teeth samples of different animals and explain what their teeth are suited to. Begin to make predictions about what types of foods these animals eat in comparison to humans. Children to create informative infographics about teeth of animals and humans.	Can children compare the uses and main functions of animal teeth? Can children explain the nutrition of different types of animals based on their teeth?	
4	To investigate why it's important to look after your teeth.	Show children images of tooth decay and mouth problems. Discuss what causes this? Conduct experiment to find out which drinks are the most harmful to our teeth using boiled eggs as an example of enamel in human teeth.	Children to explain how tooth decay happens? Can children carry out a fair test?	
5	To know the basic functions of	Children will start to learn about the digestive system: its organs and their functions. They will then use a variety of sources to learn more and answer questions. Children will devise ways to illustrate the digestive system of	Can children explain the function of the stomach, the intestines and the	

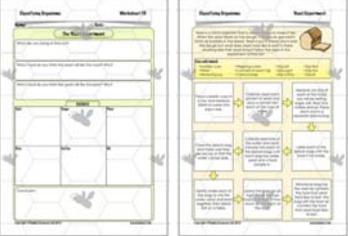
	parts of the digestive system.	human organs. i.e. stomach and tights	liver? Can children explain the functions of the kidneys?	
7	To compare the digestive systems of different types of animals.	Children will learn about ruminant (high fibrous diet), monogastric (simple digestive system), non-ruminant (birds, gizzards, grit). Children will compare why different animals have different digestive systems. What type of digestive systems do humans have?	http://www.slideshare.net/tarakate/year-11-biology-digestion-in-herbivores?next_slideshow=3 Can children name different types of digestive systems? Can children explain which animals are ruminant and non-ruminant? Can children explain what a monogastric animal is?	http://www.slideshare.net/animalcareplc2012/animal-digestive-system?next_slideshow=1 http://www.slideshare.net/animalcareplc2012/animal-digestive-system?next_slideshow=1

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To find out that sounds are made when objects and materials vibrate.	Children will learn about how sounds are created, then explore the way sounds are produced by a variety of instruments or resonant objects. Children look at how instruments make sound - violin, drums, horns How does sound resonate through instruments?	Do children know that sounds are made when objects or materials vibrate? Can children make careful observations? Can children draw conclusions about sounds from their observations?	
2	To investigate whether sounds can travel through different materials.	Children will learn about how sounds travel through different materials. They will give reasons why they think some materials will transmit sound better/worse than others, then investigate.	Do children know that vibrations from sound sources travel through different materials to the ear? Do children know sound can travel through solids, liquids and gases? Do children know that some materials allow sound to pass through them more easily than others?	
3	To explore the relationship between distance and volume.	Children will explore ways in which sounds change as you move further away from its source. They will suggest reasons for their findings.	Do children know that sounds get fainter as the distance from the sound source increases? Can children carry out an investigation to explore what happens to sound as it gets further away? Can children draw conclusions and describe what they have found out?	
4	To find out that some materials are effective in preventing vibrations from sound sources reaching the ear.	Children will learn about why it is sometimes necessary to prevent sounds from travelling, then investigate the soundproofing effectiveness of a range of materials.	Can children name some of the reasons why preventing sound to travel is sometimes important? Can children plan a test to measure how well different materials muffle sound? Can children draw conclusions about which materials muffle sound the best?	
5	To investigate how sounds can be different pitches and volumes.	children will learn about pitch and volume, then investigate ways in which they may be altered by a variety of instruments or resonant objects.	Do children know that the term 'pitch' describes how high or low a sound is? Can children recognise changes in pitch and identify high and low notes? Can children investigate different instruments and	

6	To find out how the length, thickness and tightness of a string affects its pitch.	Children will consider how the pitch of notes produced by stringed instruments is altered, then investigate further by experimenting by making instruments. How can they create a drum with a high pitch or low pitch? What correlation can they make between size and pitch?	<p>make generalisations about pitch?</p> <p>Do children know that the pitch of a stringed instrument depends on the length, thickness and tightness of the string?</p> <p>Can children suggest ways of testing what happens to the pitch of a string when you alter the length, tightness and thickness?</p> <p>Can children draw conclusions from their observations?</p>	
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	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To compare and group materials together according to whether they are solids or liquids.	Children will identify, describe, sort and compare a variety of solids and liquids, using technical vocabulary and giving reasons for their thinking.	Can children identify solids and liquids? Can children recognise similarities and Differences between solids and liquids? Do children know that some powders flow like liquids because they have fine particles?	
2	To identify and explore the properties of gases.	Children will think about what a gas is, how they behave, and how they can be observed. They will then undertake practical activities where the presence of gases can be observed.	Do children know that air has weight and is all around us? Do children know that gases are different from solids and liquids in the way they do not maintain their shape or volume?	
3	To observe that materials change state when they are heated or cooled.	Children will consider what happens when to variety of materials when they are heated or cooled. They will then either sort groups of materials according to their properties, or conduct a melting investigation.	Do children know that some materials can exist as both a solid and a liquid? Do children know that different materials will melt at different temperatures? Can children identify some materials that will not melt?	
4	To research the temperature in degrees Celsius (°C) at which materials change state.	Children will learn in greater depth about melting and find out about the melting points of a range of materials. They may then either sort a given set of materials according to their properties, or conduct a melting investigation. How can we stop this ice cube from melting? What can we do?	Why do some materials change state? How does temperature affect the rate at which materials change?	
5	To understand the process of evaporation.	Children will begin to learn about evaporation, discussing everyday situations where it can be observed. They will then either use technical vocabulary to describe evaporation in their own words, or conduct an evaporation investigation.	Do children know that gases are formed when liquids evaporate? Can children identify the 'disappearance' of water in a range of situations as evaporation? Can children make observations, report on findings from research and use straightforward scientific language?	
6	To understand the process of condensation.	Children will learn about condensation, then undertake practical investigations where they can observe and describe condensation, using technical vocabulary and drawing diagrams.	Do children know that condensation is when a gas turns into a liquid? Do children know that condensation is the reverse of evaporation? Can children record findings using simple scientific language, drawings and diagrams?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To be able to identify and classify carnivores, herbivores and omnivores.	<p>Relate back to children understands of animals teeth. Can children name the types of animals that like to only eat greens and not meat?</p> <p>Children will identify similarities and differences between the diets of different organisms, then sort and describe them using technical vocabulary such as herbivore, carnivore, and omnivore.</p>	<p>Can children explain why all animals, including humans, need to eat?</p> <p>Can children identify animals that are carnivores, herbivores and omnivores?</p> <p>Can children classify animals according to their diet?</p>	
2	To be able to construct and interpret a variety of food chains and food webs.	<p>Children learn to use classification keys to create food webs and food chains. Children will understand what a producer, consumer, plants, herbivores, predators etc. Children should also understand the energy source and secondary and tertiary consumers.</p>	<p>Do children know what the terms 'producer' and 'consumer' mean in relation to food chains?</p> <p>Can children interpret food chains?</p> <p>Can children construct food chains?</p>	
3	To explore ways of distinguishing between organisms that has similar characteristics.	<p>Children to have a numerous arrangement of animals from birds, mammals, amphibians, reptiles and insects. Can children create their own way of classifying them? Check children understands of invertebrate and vertebrate.</p> <p>Children will create scientific definitions of the differences between animals. Children to create flow charts that help to distinguish between different types of birds, mammals, amphibians, reptiles and insects.</p> <p>Children will be able to answer question such as, "What makes an amphibian an amphibian?" etc</p>	<p>Can children classify organisms according to broad characteristics?</p> <p>Can children find ways to distinguish between organisms that are similar?</p> <p>Can children use appropriate scientific vocabulary to describe organisms and their features?</p>	
4	To begin to understand the difference between vertebrate and invertebrates.	<p>Children to investigate the differences between vertebrates and invertebrates. Children will begin to make basic distinctions based on observation and classifying animals based on images and models. Children to then create their own 3D sculpture of that invertebrate and create a class classification key.</p>	<p>Can children observe differences between invertebrates?</p> <p>Can children explain what a vertebrate is?</p> <p>Can children create their own explanation of what makes that invertebrate different from another?</p>	<p>http://www.smartsciencepro.com/invertebrates-phylum/</p>

5	<p>To be able to classify plants according to their characteristics.</p>	<p>Have a vast array of plants around the classroom. Get children in groups to classify the plants into groups (leaf shape, flowering-non flowering, colour, soil sample) Get children to read the descriptions of the plants and discuss their needs - where would you find them in their natural habitat? Can we classify the plants further? Children to then look at how botanists classify plants. What do all plants have in common? Teach children the meaning of vascular and non-vascular plants. Can children conduct and create their own experiments to understand vascular and non-vascular? (Celery vs moss)</p>	<p>Do the children know the difference between vascular and non-vascular plants? What types of habitats are non-vascular plants adapted to?</p>	<p>http://www.slideshare.net/pam_chastain/vascular-and-non-vascular-plants - background subject knowledge reading for teachers</p>
6	<p>To develop a deeper understanding about the kingdoms in a classification system.</p>	<p>What kingdoms have we studied already? Animal and plant What do you think the other three might be? (Fungi, protists, bacteria) Children only need understand micro-organisms. Children will learn that microorganisms are living things that cannot be seen with the naked eye. We need to use microscopes to see them (bacteria, fungi and viruses) Conduct a "yeast" experiment to understand the life of micro-organisms. Children will figure out what they already know about micro-organisms and what do they want to find out.</p>	<p>Do the children know what micro-organisms are? Do children know that micro-organisms can be classified into groups? Do children understand that some micro-organisms can be harmful and others can be helpful?</p>	 <p>Enlarge images to see how to conduct experiment about micro-organisms.</p>

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To investigate circuits and their different components.	Children will recap prior knowledge regarding circuits, then learn about their main components and explore ways in which simple circuits are constructed.	Can children identify the purpose of different components in a circuit? Do children know that a complete circuit is needed for a device to work? Can children explain why some circuits will work and others will not depending on how the components have been put together?	
2	To investigate the differences between mains and battery powered circuits.	Children will learn about electrical safety, and why some appliances are mains powered rather than battery powered. They will then either identify a variety of electrical appliances, or create electrical safety posters.	Do children understand that working with electricity can be dangerous? Can children identify devices that are powered by mains electricity and devices that are powered by batteries? Do children know that it is safe to carry out experiments with batteries but not with mains electricity?	
3	To recognise some common conductors and insulators, and associate metals with being good conductors.	Children will learn about insulators and conductors, then either investigate the conductivity of a range of materials, or create models to show how circuits work (or not, if they have insulators in them).	Can children construct a circuit to test which materials allow electricity to pass through? Can children explain that with some materials the bulb did not light because the circuit was not complete? Can children make generalisations about which materials are conductors and which are insulators?	
4	To investigate the purposes of conducting and insulating materials.	Children will consider reasons why conductors and insulators are used in different ways inside and outside electrical appliances.	Can children name some conductors and insulators? Can children explain how appliances and devices use plastic as an insulator? Do children know that insulators are used as a safety measure?	
5	To be able to use knowledge of conductors and insulators to create switches to complete a circuit.	Children will learn about, design and test a variety of switch designs.	Do children know that a switch can be used to make or break a circuit to turn a device on or off? Can children use their knowledge of conductors to create a working switch? Can children explain how their switches work?	
6	To be able to plan and carry out an experiment to see how to change the brightness of a bulb.	Children will suggest ways in which a bulb in a circuit could be made to glow brighter or dimmer, then plan experiments where they may explore their ideas.	Can children make predictions about how to alter the brightness of a bulb? Can children plan and carry out an experiment, changing one factor at a time? Can children draw conclusions from their investigations?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.	Children will consider what weight is, and how the impact caused by falling objects can vary, depending on their size, shape, mass, and the height they fall from.	Can children explain why objects fall towards the centre of the Earth? Do children understand the causal link between the mass of an object and the amount of force with which gravity acts on it?	
2	To identify the effects of friction acting between moving surfaces	Children will learn about what friction is and some ways in which it can be measured. They will also identify instances of high and low friction and conduct friction investigations.	Can children define friction? Do children know that friction can be useful and give some examples? Can children carry out an investigation, making sure that it is a fair test?	
3	To identify and explain the effects of air resistance.	Children will learn about ways in which air resistance affects moving objects, then plan and conduct investigations where they will determine how air resistance affects falling objects.	Do children know that air resistance is a force that slows objects moving through the air? Can children plan, carry out and assess experiments to investigate air resistance? Can children draw conclusions from their investigations?	
4	To identify and explain the effects of water resistance.	Children will learn about water resistance and how it affects objects moving through water. They will then conduct water resistance investigations.	Do children know that water resistance slows an object moving through water? Can children plan and carry out an experiment, making sure it is a fair test? Can children identify trends in results and draw conclusions?	
5	To recognise that levers and pulleys allow a smaller force to have a greater effect.	Children will learn how simple machines can make it easier to move objects. They will then make and test models which have pulleys or levers.	Do children recognise that levers and pulleys allow a small force to have a greater effect? Can children make and improve models that use pulleys or levers? Can children explore the effects of changing parts of their model?	
6	To recognise that gears allow a smaller force to have a greater effect.	Children will learn about how gears work together in transmissions and look at a variety of transmission. They will then make models to explore in greater depth how gears work.	Do children recognise that the speed or amount of force transmitted is affected by changing the size of the gears in a transmission? · Can children make transmissions where two or more gears work together?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To describe the process of sexual reproduction in flowering plants.	Children will recap the names of parts of a flower and learn about how flowering plants reproduce sexually. They will then either label diagrams of flowering plants or dissect flowers.	Can children name and describe the functions of the main parts of flowers? Can children describe the life process of sexual reproduction in flowering plants? Can children identify and label the parts of flowers?	
2	To describe the process of asexual reproduction in plants.	Children will learn about some ways in which nonflowering plants reproduce asexually, then either describe one of these processes in their own words or grow plants from cuttings.	Do children understand what asexual reproduction is? Can children explain some ways in which plants reproduce asexually? Can children describe the life cycles of some asexually reproducing plants?	
3	To describe the process of sexual reproduction in animals.	Children will learn about sexual reproduction in animals, including some ways in which some reptiles and fish reproduce. They will then either sort and classify animals, or compare their life expectancies and gestation periods.	Can children define some of the ways in which sexual reproduction in animals occurs? Can children compare species that reproduce in different ways and consider reasons why? Can children record data using scientific graphs and/or diagrams?	
4	To observe and compare the life cycles of animals in our local environment with other animals around the world.	Children will study and compare the life cycles of animals living in a variety of environments. They will then either research animals living in different environments, or compare the life cycles of two animals living in different environments.	Can children describe the conditions in a local environment as well as other environments around the world? Can children establish causal links between the life cycle of animals and their environment? Can children compare the life cycles of animals living in different environments?	
5	To compare how different animals reproduce and grow.	Children will learn more about the life cycles of animals, focussing on gestation periods and growth. They will then explain the life cycles of animals in their own words, using technical vocabulary.	Using scientific vocabulary, can children explain some of the ways in which different animals reproduce? Can children compare the life cycles and methods of reproduction of different animals? Are children able to give reasons for the differences between life cycles of different animals?	

7	To find out about the work of naturalists.	Children will learn about the work of naturalists and animal behaviourists, then research and write indepth about a well-known naturalist.	Do children understand what naturalists do? Can they explain why the work of naturalists is important? Can children give reasons why secondary sources of scientific evidence cannot always be trusted?	
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	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To describe the Sun, Earth and Moon as approximately spherical bodies.	Children will consider the evidence which proves that the Earth, Sun and Moon are spherical, then organise information or answer questions to show what they have learned and understood. Children compare understanding of historical sources to now and explain how they know the Earth is round.	Do children recognise that the Earth, Sun and Moon are spherical? Can children give examples of evidence to prove that the Earth, Sun and Moon are spherical? Can children describe why people have not always believed that the Earth was spherical?	
2	To find out about the size of the Earth, Sun and Moon and how far away from each other they are.	Children will learn about the sizes of the Earth, Sun and Moon, then use everyday objects to compare their relative sizes and estimate the distances between them. Children will do this with the rest of the solar system creating a 3D visual diagram of a solar system using every objects.	Can children choose three spheres to represent the relative sizes of the Sun, Earth and Moon? Do children know the actual sizes of the Sun, Earth and Moon? Do children know approximately how far away from each other the Earth, Sun and Moon are?	
3	To use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	Children will consider analogies which help explain why we perceive the Sun to be moving across the sky, but it is the Earth rotating which creates the effect. They will then draw diagrams or make models to show what they have learned. Children will role-play being the Earth, Sun and Moon and be able to describe orbits, Earth's axis and tilt to also explain seasons, night and day. Children will create ICT presentations showing their understanding.	Do children know that shadows change position during the day and why? Do children know that the Earth spins on its axis once every 24 hours, making the Sun appear as though it is travelling across the sky? Can children explain why night and day do not happen at the same time in different parts of the world?	
4	To use data to draw conclusions about the Sun at different times of the year.	Children will study data showing sunrise and sunset times. They will then plot and interpret data using graphs. Children will be able to explain why days are longer in the Summer and shorter in the Winter. They will compare data that shows seasonal changes and use their knowledge to explain sunrise and sunset.	Can children put data into a graph accurately? Can children use graphs to answer questions and draw conclusions? Can children explain why the length of daylight changes throughout the year?	

5	To describe the movement of the Earth, and other planets, relative to the Sun in the Solar System.	Children will share their ideas about what a year is, then learn how a year on Earth and on other planets is defined. They will then draw diagrams, write definitions or draw posters to show what they have learned. These will be used as part of their PBL exhibit.	Do children know that a year is defined as the length of time it takes for a planet to orbit the Sun? Do children know that an Earth year is 365.25 days? Can children explain why we have different seasons throughout the year?	
6	To describe the movement of the Moon relative to the Earth.	Children will learn about the phases of the Moon and what a lunar month is. They will draw diagrams, or conduct research to show what they have learned and discover more. Children will gather all their knowledge for their PBL exhibit.	Do children know that the Moon is a natural satellite of the earth? Do children know that the Moon reflects the Sun's rays? Can children explain why the Moon appears to change shape during the lunar cycle?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.	Children will predict, investigate, observe and explain what happens when a variety of materials are mixed with water. They will also consider how the original materials might be recovered from a solution.	Do children know that mixing materials can cause them to change? Do children understand the terms 'dissolve', 'react', 'solution', 'soluble'? Do children know that dissolving is a reversible change?	
2	That some changes of state and dissolving and mixing processes can be reversed through filtering, sieving and evaporating.	Children will explore ways in which the original materials in some mixtures and solutions may be recovered.	Do children know what the terms soluble and insoluble mean? Do children know that evaporation can be used to separate soluble materials from water? Do children know that filtering can be used to separate insoluble materials from water? Do children know that some changes of state are reversible?	
3	Explain that some changes form new materials, and that these changes are not usually reversible.	Children will identify solutions which are the product of irreversible reactions between the substances that were dissolved. They will then carry out practical investigations involving irreversible reactions.	Do children know that when some materials are mixed together they cannot be separated again? Do children know that when an irreversible change takes place a new substance is produced? Do children know how to tell if the new substance produced is a gas?	
4	Explain that some changes, caused by heating or cooling form new materials, and that these changes are often not reversible.	Children will learn about reversible and irreversible changes caused by heating or cooling materials. They will then either predict and sort materials according to what may happen when they are heated or cooled, or explore irreversible reactions by cooking. (DT LINK WITH COOKING AND NUTRITION)	Do children know that heating and cooling materials can cause them to change? Can children recognise reversible and irreversible changes caused by heating and cooling? Can children explain how to reverse a change caused by heating or cooling?	
5	Explain that changes caused by burning form new materials, and that these changes are not reversible.	Children will consider what happens when materials are burned, including what new materials are produced. They may then either write about a range of flammable materials, or carry out a burning investigation.	Do children know that new materials are formed when materials are burned? Can children describe what is seen when certain materials are burned? Can children identify and assess hazards associated with burning materials?	
6	To compare and group together everyday materials on the basis of their	Children will identify several different properties of a range of materials (conductive, magnetic, soluble, flexible, transparent etc.), then either sort given sets of materials, or investigate the properties of some materials.	Can children describe everyday materials according to their properties? Can children compare and group everyday materials according to their properties?	

	properties.		Can children explain why some everyday materials are useful due to their properties?	
7	To give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials.	Children will consider ways in which certain properties of materials make them useful. They will then sort, test and select materials for different uses, depending on their properties.	Can children interpret the results of tests and use them to answer questions? Can children plan a fair test to answer a question? Can children give reasons for the uses of different materials in everyday objects?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To recognise the stages of growth and development in humans.	Children will learn about, and then order, the main stages in the life cycle of humans. They will then consider and describe factors which may affect the rate of growth in humans.	Can children name the main stages in the life cycle of humans? Can children correctly order the main stages? Can children broadly define the age ranges for each of the main stages? Can children explain some of the physical changes that occur at different stages in the life cycle of humans?	
2	To know the stages in the gestation period of humans and compare them to other animals.	Children will learn about sexual reproduction, fertilisation and pregnancy for humans. They may then compare the gestation periods of humans with other animals.	Can children describe the main stages of gestation in humans? Can children explain how embryos and fetuses grow and develop in the womb? Can children define and use key vocabulary to describe gestation in humans?	
3	To recognise the stages of development during childhood and understand the needs of children at those stages	Children will learn about changes during infancy and childhood, then consider the needs of children, and how these change over time as they develop.	Can children describe the needs of a newborn baby? Can they compare the needs of a human baby to those of other mammals? Can they describe the stages of development that occur during childhood? Can they describe how the needs of humans change at different points in their life cycle?	
4	To understand the initial changes inside and outside of the body during puberty.	Children will learn about the roles of some hormones in the body, and how they affect changes in boys and girls at the start of puberty. They will also identify and describe or label changes that occur inside and outside the body.	Can children explain the initial changes that occur inside and outside the body at the start of puberty? Can children correctly identify the parts of the body that change during puberty? Can children explain in simple terms the role played by hormones in the growth of humans and other animals?	
5	To know the changes that occur during puberty and how they differ for boys and girls.	Children will learn about later changes during puberty and adolescence, including sperm production and menstruation. They will then consider and describe ways in which children can stay fit and healthy during puberty.	Can children remember some of the initial changes during puberty? Can children explain some of the ways in which boys' and girls' bodies start to differ during puberty? Can children suggest some ways in which teenagers can look after themselves and stay fit and healthy during puberty?	
6	To understand how the body changes during adulthood and old age.	Children will learn about some changes in the body that occur during adulthood and old age. They may then either describe ways in which they may change as they get older, or discuss some problems associated with stereotypical views regarding the elderly.	Can children explain some ways in which the body changes during old age? Can children describe some ways in which older people can stay fit and healthy?	

	Lesson Objective	Overview	Assessment questions
1	To investigate what happens to the heart when we exercise and why.	What do we know about organs? What do we know about the heart already? Do you know why it's important to take care of your heart? Children will learn about what happens to the heart when we exercise, then conduct practical investigations where heart rate is measured. Discuss why it's good for the heart rate to be raised in exercise.	Can children describe the functions of the heart? Can children investigate how the heart is affected through exercise and draw conclusions? Do children know that hearts need to have exercise to stay healthy?
2	To investigate some different food groups and find out why a variety of foods is important for a healthy diet.	What foods are good for your heart? Discuss why fast food is not good for a healthy balanced diet. Children discuss portion size and control. Why is this important? Children will learn about food groups: what they provide our bodies with, and what quantities of each we need in a balanced diet. They will then either design balanced meals or study food labelling.	Can children name some of the different food groups? Do children know which types of foods are included in different food groups? Do children know why each different food group is important for a healthy lifestyle?
3	To find out how nutrients and water are transported in the human body.	Try to get pig hearts and lungs to dissect in the lesson so that children can have a real experience of knowing the different parts of the heart. Children will learn about the functions of the heart, lungs and circulatory system, then either draw and label diagrams, or perform a heart dissection to study its internal structure.	Do children know that the circulatory system transports blood and nutrients to the different parts of the body? Can children describe how the circulatory system works? Can children record their own resting pulse rate accurately?
4	To investigate how muscles move the skeleton and how muscle activity requires increased blood flow.	Children will learn about how muscles work, and how they work in groups to move the skeleton. They will then explore in greater depth how blood flow increases to different muscle groups during different types of exercise. Children will learn about which types of exercise are good for weight loss, toning muscles and building muscles. Children will understand how muscles work in pairs and be able to name some of these groups.	Do children know that muscles work in pairs to move different parts of the skeleton? Do children know that when muscles exercise they need an increased flow of blood because the muscles are working harder? Can children explain why their pulse rate increases when they exercise?
5	To investigate the effects of tobacco, alcohol and other drugs.	Children will learn about what drugs are, how some are helpful and some are harmful. They will also consider ways in which drugs have side effects. Following this, children may explain differences between drugs, or their effects, in their own words. Children create practical demonstrations to show how smoking and drinking affect your internal organs and why this is not good for your health.	Do children know that drugs affect the way the mind or body works? Do children know that some drugs are beneficial even though they may have unpleasant side-effects? Are children aware of some of the negative effects of tobacco and alcohol on the body?
6	To evaluate what we can do to keep our bodies healthy.	Children will create presentations and demonstrations to their parents about how they can live a healthy lifestyle.	Can children describe the impact that diet has on the body? Can children describe why exercise is important for a healthy lifestyle? Can children describe the harmful effects some drugs can have on the body?

National Curriculum

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.

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To recap knowledge of electricity and circuits.	Children will recap prior knowledge regarding electricity and circuits, then identify, discuss or test to find differences between series and parallel circuits.	Do children know what the main components of a circuit are? Do children recognise what the difference between a series and a parallel circuit is? Can children draw and/or construct working circuits?	https://www.hamilton-trust.org.uk/browse/science/y6/year-6-autumn-2-electricity-electric-celebrations/116312
2	To investigate ways in which the brightness of a bulb or speed of a motor is changed.	Children will suggest ways in which changing circuits could affect the brightness of a bulb or the speed of a motor. They may then either give reasons for differences between drawings of circuits, or investigate their ideas by making circuits.	Do children know that the brightness of a bulb or the speed of a motor can be changed in a circuit? Do children know that the brightness of a bulb or speed of a motor depends on how much power is supplied to each component? Do children know that bulbs and motors will blow out if too high a voltage is used?	Create a project where children can design a series or parallel circuit for a DT project.
3	To be able to recognise and use conventional symbols for circuits.	Children will learn about a variety of symbols used in circuit diagrams. Children then create the circuits based on the symbols discussing which circuits are the most powerful and why.	Do children know why symbols are used to draw circuit diagrams? Can children recognise the symbols for various common circuit components? Can children use conventional circuit symbols to draw and/or construct circuits?	
4	To be able to plan, carry out and evaluate an experiment to see how changing the wire in a circuit affects the brightness of a bulb.	Children will suggest ways in which wires of different lengths, thicknesses and materials may be tested to determine how they affect the brightness of a bulb. They may then either conduct an experiment, or interpret a given set of data.	Do children know that the brightness of the bulb in a circuit can be altered by changing the wires? Can children suggest questions to investigate, decide what to do and what equipment to use to test the question? Can children make fair comparisons and draw conclusions from their results?	

Science Unit Overview: Light

Year 6 Term 4

- i) recognise that light appears to travel in straight lines
- ii) 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
- iii) 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
- iv) use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To explain and show what I already know about light.	Review children's understanding of light and shadows by asking them to draw and annotate a diagram to show how a shadow is formed. Suggest children use terms eg light source, opaque, travel, block. Discuss children's diagrams with them, drawing attention to the idea of light travelling. What do they know? What do they want to find out?	Children should be able to explain eg by drawing a diagram that light travels from the torch to the wall and may be blocked by an opaque object	Light source, Man made Artificial, Straight lines Shadows, Translucent Transparent, Opaque Absorb, Mirror
2	To know that light travels from a source To use their knowledge about light to explain observations	If appropriate, demonstrate to children or ask children to demonstrate to others that light travels eg by shining a torch onto a wall and blocking the light half way using a piece of card. Ask children to draw a diagram to explain what is happening.	Children should be able to explain eg by drawing a diagram that they see the torch light when light from it enters their eyes	
3	To know that we see light sources because light from the source enters our eyes	Ask children to explain how they see the light from the torch. Prompt by showing small light sources in dark areas and asking eg Why we can see them more clearly when they are switched on? Help children to draw diagrams to show and explain what is happening.	Children should be able to explain eg using drawings how mirrors can change the direction of a light beam, representing the direction in which the light beam travels by an arrow	
4	To know that light from an object can be reflected by a mirror, the reflected light enters our eyes and we see the object To know that the direction of a	Ask children to explore what they can see with a mirror by posing questions eg Can you see behind you? Can you make a beam of light move round the classroom? Ask children to think of other questions to explore and to record and explain their observations in drawing and writing. Help children to represent the direction of a light beam using straight lines with arrows. Children conduct their own experiment and share their findings. Children will create their own investigation and their own success criteria.	Children should be able to explain eg using drawings how mirrors can change the direction of a light beam, representing the direction in which the light beam travels by an arrow To use labelled diagrams to explain their understanding.	

	beam or ray of light travelling from a light source can be indicated by a straight line with an arrow			
5	To know that when a beam of light is reflected from a surface, its direction changes. To make careful observations and comparisons	Demonstrate to children, in a relatively dark area, what happens when a torch with a powerful beam is placed on a piece of white paper and shone at a mirror. Ask children to trace the path of the beam and of the reflected beam and to explore what happens when the light hits the mirror at different angles. <ul style="list-style-type: none"> • trace the path of the torch beam and explain that it is reflected from the mirror • recognise eg in drawings that when the angle at which the light hits the mirror is changed, the path of the reflected light also alters 		
6	To make and record comparisons of how different surfaces reflect light and to draw conclusions from the comparisons	Present children with a collection of shiny and dull surfaces eg mirrors, polished metals, perspex, paper, gloss and matt painted surfaces, polished wood. Ask children to find out which ones they can see themselves in and which ones reflect a torch beam, to record their results and to draw conclusions from their results. Ask children to use their own knowledge and secondary sources to identify everyday uses of mirrors.	produce a table of observations showing that shiny materials both reflect a torch beam and allow children to see themselves <ul style="list-style-type: none"> • make a generalisation about shiny surfaces and reflection eg polished surfaces reflect light better than other surfaces, shiny surfaces can be used as mirrors, dull surfaces cannot 	
7	To identify factors which might affect the size and position of the shadow of an object To investigate how changing one factor causes a shadow to change To consider trends in results and to decide	Remind children of shadow formation using an opaque object eg a cardboard figure. Ask them to explore ways in which the shadow of the figure can be made to change. Ask children to suggest questions they could investigate eg What happens to the size of the shadow when you move the figure nearer the light? Help children to decide how to carry out the investigation, including deciding on the measurements they are going to take. Ask children to record results and help them to present them in a line graph. Talk with children about patterns in the results and, if necessary, encourage them to repeat measurements to check them.	suggest questions which might be investigated eg distance of object from screen, distance of object from light source, angle at which light source shines on object <ul style="list-style-type: none"> • show, in the investigation, that they changed one factor while keeping others the same • identify results which do not seem to fit the pattern and check these by repeating measurements • make a generalisation from the results eg the nearer the figure was to the torch, the bigger the shadow 	

	whether there are results which do not fit the pattern			
8	To recognise differences between shadows and 'reflections'	Review work in this unit by asking children to suggest differences between shadows and images (reflections) seen in shiny surfaces. identify observable differences eg my shadow is dark and I can only see my shape, when I look at myself in a mirror I can see my face, or opaque objects make shadows and you can see yourself in shiny surfaces • explain differences between shadows and reflections in terms of light eg shadows are made when light is blocked, when light is reflected it changes direction when it hits a shiny surface		

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	Children will learn about traits that are passed from one generation by the next, and consider ways in which some inherited characteristics may vary. They may then identify ways in which families or groups of people have some similar or shared characteristics.	Do children recognise that animals produce offspring that are like themselves? Can children explain why variation in offspring occurs?	
2	To identify how animals and plants are adapted to suit their environment in different ways.	Children will learn about how random mutations may or may not be passed from one generation to the next, and how this process results in variation. They will then consider whether certain variations are advantageous, giving reasons why	Can children describe the conditions of an environment? Can children identify characteristics which help an organism to be well suited to its environment? Do children understand why different organisms in the same environment may have different characteristics?	
3	To understand that adaptation of plants and animals to suit their environment may lead to evolution.	Children will learn about how, if traits are advantageous to a species, they may be passed on and that evolution can occur. They may then undertake some of a range of activities where they will identify advantageous traits of species, learn more about evolutionary scientists, or sequence description of evolutionary processes.	Do children know that not all inherited characteristics are advantageous? Can children explain why advantageous characteristics are more likely to be passed from generation to generation? Do children understand that whole species can evolve in this way?	
4	Evolution and Inheritance: Darwin	Children will learn about the contributions of ancient Greek scientists to our understanding of evolution. They will also study in greater depth the work of Carl Linnaeus and, particularly, that of Charles Darwin.	Do children know that our understanding of process of evolution has developed over time? Can children share what they have learned about the process of evolution? Can children share what they have learned about the life and work of Charles Darwin?	
5	To recognise that living things have changed over time and that a number of factors can affect a	Children will learn about mutations, and how external factors can affect the evolution of a species. They will then either summarise their learning about how the fossil record provides evidence of this, or summarise given technical vocabulary in their own words, drawing on prior knowledge and learning.	Do children understand that a species can change over time due to mutations? Do children understand that a species can change over time due to external factors such as competition from other species, disease or	

	species' evolution.		climate change?	
6	To understand how humans have evolved over time, and how human behaviour can affect change in species over time.	Children will learn about human adaptations which allow us to thrive, and then consider some impacts of human behaviour on other species. They will then either discuss these impacts in greater depths, or discuss some beliefs and misconceptions about evolution.	Do children know that primate species (including humans) have changed over time? Can children explain some ways in which human behaviour has changed the characteristics of other species? Can children identify positive and negative consequences of this human behaviour?	

	Lesson Objective	Overview	Assessment questions	Resources/vocabulary
1	To recap ways of grouping organisms according to their characteristics.	Children will learn about some of the broad groups used to classify animals, then identify, sort or describe organisms within those groups according to some of their characteristics. Can children classify animals into birds, amphibians, reptiles, mammals and insects? Do they recall facts about what makes a bird a bird? Can they discuss the difference between invertebrate and vertebrate?	Do children know that organisms can be grouped according to their characteristics? Can children describe the characteristics of different classifications of animals? Can children match animals to their group according to their characteristics?	
2	To explore ways of distinguishing between organisms that has similar characteristics.	Children will consider ways in which animals which belong to the same broad group can be distinguished and further classified.	Can children classify organisms according to broad characteristics? Can children find ways to distinguish between organisms that are similar? Can children use appropriate scientific vocabulary to describe organisms and their features?	
3	To be able to classify plants according to their characteristics.	Children will learn some ways in which plants are classified by botanists, then take photos, collect samples, or research, then classify plants.	Do children know that plants can be sorted into groups according to their characteristics? Can children explain the difference between vascular and non-vascular plants? Can children explain the difference between flowering and non-flowering plants?	
4	To find out about Carl Linnaeus and his classification system.	Children will learn about the development of Linnaeus' classification system, then use it to help them identify, classify, and answer questions about a number of different organisms.	Do children know who Carl Linnaeus is and how he contributed to science? Do children know that animals can be assigned to specific groups based on their characteristics? Can children give reasons for why classification systems are important?	

