- National curriculum
- National curriculum(non-statutory

Year	Term 1 - Autumn	Term 2 - Spring	Term 3 - Summer
EYFS	Seasons Changing states of Matter(weather linked)	My Body and health (doctors, dentists, how can we keep our body healthy?)	Health, Habitats, Plants and Materials
1	**Everyday Materials** **BIG QUESTION-** What are the things I use made from? **Scientists** **Charles Macintosh**—Raincoat and waterproof materials **Zach Johnson**—Clothes made from recycled plastic bottles found in the ocean Distinguish objects from materials, describe their properties, identify and group everyday materials Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties **Vocab** **Materials:** hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. brick, paper, fabrics, elastic, foil. **Working scientifically** Performing simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket?...for curtains? ...for a bookshelf? ...for a gymnast's leotard?' **Seasonal Changes** **BIG QUESTION-** What is it like in each season? **Scientists** **Christopher Wren**— Inventor of the rain gauge. **Jane Strachen**—Climate Scientist **Observe and describe changes across the four seasons.** Observe and describe weather associated with the seasons and how day length varies Know that it is not safe to look directly at the sun, even when wearing dark glasses **Working scientifically** Making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change.	**Animals including Humans** **BIG QUESTION- Do animals all have the same parts?** **Scientists** **Joan proctor**—zoologist and curator of reptiles **Dr Sandeun Lek Chailert**— Cre-ator of the Elephant nature foun-dation protecting elephants. Describe and compare observable features of animals from a range of groups Group animals according to what they eat Identify and name a variety of common animals including fish, amphibians, reptiles, mammals and birds Identify and name a variety of common animals that are carnivores, herbivores and omnivores Name and locate parts of the human body, including those related to the senses Describe and compare observable features of animals from a range of groups Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense Know how to take care of animals taken from their habitat and understand the need to return them safely to their homes Know how to use the vocabulary and identify: head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth and teeth Vocab Humans and animals: head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth and teeth Working scientifically Using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.	**Plants** **BIG QUESTION-** What ways can I identify a plant? **Scientists** **Alan Mitchell**—British forester who recorded tree growth. **Suzanne Simard**—professor of forest ecology Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees (leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem). Use the local environment throughout the year to explore and answer questions about plants growing in their habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted. **Vocab** **Plants**: leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem. **Working scientifically** Observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; Describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; Compare and contrast what they have found out about different plants.

2	**Uses of Everyday Materials** **BIG QUESTION- Why do we make things out of certain materials?** **Scientists** **John McAdam**—Road surfacing **Julie and Scott Brusaw**—Solar roads Distinguish objects from materials, describe their properties, identify and group everyday materials and compare their suitability for different uses Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching **Vocab** Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching **Working scientifically** Comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); Observing closely, identifying and classifying the uses of different materials, and recording their observations.	**Living things and their habitats** **BIG QUESTION-** What features do animals have that allow them to thrive in their environment? **Scientists** **Evelyn Cheesman—**Entomologist and curator of insects **Dr Alexandra Harmon Threatt**—Entomologist and bee expert Iidentify whether things are alive, dead or have never lived Explore and compare the differences between things that are living, dead, and things that have never been alive Name different plants and animals and describe how they are suited to different habitats Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including micro-habitats Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food **Vocab:** **Habitat**: A natural environment or home of a variety of plants and animals **Micro-habitat**: A very small habitat, for example for woodlice under stones, logs or leaf litter **Working scientifically** Sorting and classifying things according to whether they are living, dead or were never alive. Recording their findings using charts. Describe how they decided where to place things, exploring questions for example: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. Construct a simple food chain that includes humans (e.g. grass, cow, human). Describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.	**Plants** **BIG QUESTION-** What things do plants need to grow? **Scientists** **Marie Clark Taylor**— botanist who studied effects of light on plant growth. **Michael Way**—Botanist, runs plant conservation pro-jects, seed banking Describe the basic needs of plants for survival and the impact of changing these and the main changes as seeds and bulbs grow into mature plants Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy **Vocab:** **bulbs. germination, reproduction (questions that recognise growth), growth, survival** **Working scientifically** observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; Setting up a comparative test to show that plants need light and water to stay healthy. **Animals including humans** **BIG QUESTION-** How do humans stay healthy? **Scientists** **Louis Pasteur**— developed the first vaccines **Katalin Kariko**—Covid vaccine development Name and locate parts of the human body, including those related to the senses and describe them Group animals according to what they eat, describe how animals get their food from other animals and/or plants, and use simple food chains to describe these relationships Describe the basic needs of animals for survival and the main changes as offspring from young animals, including humans, grow into adults Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene Describe the basic needs of animals, including humans, for survival (water, food and air) They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs. The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults can include reference to baby, toddler, child, teenager, adult **Vocab:** **egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep**

			Working scientifically observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.
3	**Plants** **BIG QUESTION-** What do different parts of a plant do? **Scientists** **Anna Atkins -** botanist and photographer of plants **Dr Aaron P Davis**—Senior Re-search Leader of Plant Resources for Kew. Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant Investigate the way in which water is transported within plants Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction. **Vocab:** Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal) **Working scientifically** Comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; Looking for patterns in the structure of fruits that relate to how the seeds are dispersed. Observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers. **Animals including humans** **BIG QUESTION-** How can animals move? What is in food? **Scientists** **Dr Jane Goodall—**International chimpanzee expert and zoologist **Jill Robinson**— Animal right activ-ist. Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat Know how to identify that humans and some other animals have skeletons and muscles for support, protection and movement	**Forces and Magnets** **BIG QUESTION-** How do moving objects slow down? **Scientists** **Isaac Newton—**Developed the theory of gravity. What materials are attracted to magnets? Compare how things move on different surfaces Notice that some forces need contact between two objects, but magnetic forces can act at a distance Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials Describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing Pupils should observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). **Vocab:** Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole **Working scientifically** Comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces, and gathering and recording data to find answers to their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.	**Rocks** **BIG QUESTION-** Why are there different rocks? **Scientists** **Mary Anning** —Fossil collector and palaeontologist . **Holly Betts**—Palaeontologist in-vestigating when things evolved Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties Describe in simple terms how fossils are formed when things that have lived are trapped within rock Recognise that soils are made from rocks and organic matter. Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment. **Vocab:** Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil **Working scientifically** Observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed. **Light** **BIG QUESTION-** What is a shadow? **Scientists** **Lewis Latimer—**Helped invent the light bulb. **Nicky Fox**—Nasa Scientist who studies the sun. Recognise that one needs light in order to see things and that dark is the absence of light Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and that there are ways to protect eyes. I know that it is not safe to look directly at the sun, even when wearing dark glasses

	Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions. **Vocab:** Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine **Working scientifically** Identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy, and design meals based on what they find out.		Find patterns in the way that the size of shadows change Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change. **Vocab:** Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous **Working scientifically** Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.

4	**States of Matter** **BIG QUESTION-** What happens when we heat solids? What happens to puddles after it rains? **Scientists** **Antoine Lavoisier**—Developed the modern system of naming chemical substances. Key in discoveries around combustion. Compare and group materials together, according to whether they are solids, liquids or gases Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled. **Vocab:** Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle **Working scientifically** Grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.	**Living things and their habitats** **BIG QUESTION-** What happens to living things when their habitats change? **Scientists** **Lorenzo Langstroth**—Inventor of the beehive **Seirian Sumner—** Ecologist who studies focus on bees and wasps Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Know how to recognise that environments can change and that this can sometimes pose dangers and have an impact on living things Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals, flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups, for example: fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. **Vocab:** Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate **Working scientifically** using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched. **Animals including humans** **BIG QUESTION**- What happens to food when we eat it? **Scientists** **Dr Jane Goodall—**International chimpanzee expert and zoologist **Jill Robinson**— Animal right activist. Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey Pupils should be introduced to the main body parts associated with the digestive system, for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine, and explore questions that help them to understand their special functions. **Vocab** Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor,	**Electricity** **BIG QUESTION-** What materials conduct electricity? **Scientists** **Professor James Blyth**— The first wind turbine to generate electricity **Yi Guo**—Senior Scientist for renewable energy Identify common appliances that run on electricity.Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators, and associate metals with being good conductors Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. **Vocab:** Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol **Working scientifically** Observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit. **Sound** **BIG QUESTION-** How are sounds made? **Scientists** **Miller Reese Hutchinson—**Hearing Aids **Francesca Rosella—** Cute circuit smart t clothing I know how to identify how sounds are made, associating some of them with something vibrating. I know how to recognise that vibrations from sounds travel through a medium to the ear. I know how to find patterns between the pitch of a sound and features of the object that produced itI know how to find patterns between the volume of a sound and the strength of the vibrations that produced it. I know how to recognise that sounds get fainter as the distance from the sound source increases Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.

		canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain **Working scientifically** Comparing the teeth of carnivores and herbivores and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.	**Vocab** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation **Working scientifically** Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.

5	**Earth and Space** **BIG QUESTION-** Why does the Moon appear to change shape? **Scientist** C**aroline Herschel**—Astronomer **Maggie Aderin-Pocock** — Space Scientist I know how to describe the movement of the Earth, and other planets, relative to the Sun in the solar system I know how to describe the movement of the Moon relative to the Earth I know how to describe the Sun, Earth and Moon as approximately spherical bodies I know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky I know that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). I know that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones). Pupils should be introduced to a model of the Sun and Earth that enables them to explain day and night. Pupils should learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). They should understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones). Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses. **Vocab** Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets **Working scientifically** Pupils might work scientifically by: comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.	**Forces** **BIG QUESTION- How do machines work?** **Scientist** **Galileo Galilei - Contribution to the science of motion.** **Emma England—Aerospace engi-neer** I know how to explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object I know how to identify the effects of air resistance, water resistance and friction, that act between moving surfaces I know how to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect **Living things and their habitats** **BIG QUESTION-** How do living things make copies of themselves? **Scientits** I know how to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird I know how to describe the life process of reproduction in some plants and animals Pupils should study and raise questions about their local environment throughout the year. They should observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment. They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall. Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals. **Vocab** Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings **Working scientifically** Pupils might work scientifically by: observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow. **Animals including humans** **BIG QUESTION-** How do humans change as they get older? **Scientist**	**Everyday Materials** **BIG QUESTION-** What is a mixture and how do I separate it into its parts? **Scientist** **Walter Lincoln Hawkins—** Engineering and uses of plastics. **Spencer Silver**— invented the post it note. I know how to compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets I know how to recognise that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution I know how to use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating I know how to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic I know how to demonstrate that dissolving, mixing and changes of state are reversible changes I know how to explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4. They should explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes. Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. They should find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton. **Vocab** Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material **Working scientifically Pupils might work scientifically by: carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?' They might compare materials in order to make a switch in a circuit. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.**

		Eugenie Clark—Know as the shark lady for her study of shark behaviour. **Sarah Fowler OBE–** Works in ma-rine ecology and conservation. Pupils should be taught to describe the changes as humans develop to old age. Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty. Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows. Vocab Puberty, the vocabulary to describe sexual characteristics **Working scientifically** Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.	**Famous Scientists** They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall They should find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton. Pupils should find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of Scientists such as Ptolemy, Alhazen and Copernicus. Pupils might find out how Scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.

6	**Animals, including Humans** **BIG QUESTION-** What affects the health of humans? **Scientist** **Joan proctor**—zoologist and curator of reptiles **Dr Sandeun Lek Chailert**— Creator of the Elephant nature foundation protecting elephants. Pupils know how to identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Pupils know how to recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Pupils know how to describe the ways in which nutrients and water are transported within animals, including humans **Light** **BIG QUESTION-** How does light travel? **Scientist** **Alhazen**— discoveries in optics and knowing light affect our eyes **Dr Patricia Bath**— Laser cataract surgery Pupils know how to recognise that light appears to travel in straight lines Pupils know how to 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 Pupils know how to 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 Pupils know how to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	**Living things and their habitats** **BIG QUESTION-** How are living things grouped together? **Scientist** **Carl Linnaeus**—created a modern systems of naming organisms. Pupils know how to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals Pupils know how to give reasons for classifying plants and animals based on specific characteristics Pupils should build on their learning about grouping living things in year 4 by looking at the classification system in more detail. They should be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible, they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). They should discuss reasons why living things are placed in one group and not another. **Working scientifically** Pupils might work scientifically by: using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system. **Electricity** **BIG QUESTION-** How do humans use electricity? **Scientist** **Nikola Tesla**— invented the current power system that provides electric-ity in homes and buildings. **Peter Rawlinson**— British engineer developing electrical vehicles I know how to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit I know how to 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 I know how to use recognised symbols when representing a simple circuit in a diagram	**Evolution and Inheritance** **BIG QUESTION-** What happens to species over a long time? **Scientist** **Charles Darwin**—Biologist known for contributions to the science of evolution. **Kevin Laland**—Evolutionary biologist I know how to recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago I know how to recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents I know how to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution **Famous Scientist** Pupils might find out about the significance of the work of Scientists such as Carl Linnaeus, a pioneer of classification Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.
