

Science - Subject Curriculum Map – 2023-24



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2						
YR	Unit: Understanding the world <i>The Natural World: Habitats</i> Big Question: What is my environment?		Unit: Understanding the world <i>The Natural World: Seasonal Change</i> Big Question: What are our seasons?		Unit: Understanding the world <i>The Natural World: states of matter</i> Big Question: How do things change?							
Year 1	Unit: Plants <i>I am a botanist: I study plants.</i> Topic: Our Wonderful world Big Question: How do plants grow? NC: <ul style="list-style-type: none"> identify and describe the basic structure of a variety of common flowering plants, including trees. Sticky Knowledge: -A seed contains a miniature plant that can develop into a fully grown plant. -A bulb has underground vertical shoots which already has modified leaves -Seeds and bulbs need water to grow but most do not need light (germination) -Seeds and bulbs have food stores inside them to help the plant start to grow Key Vocab:		Unit: Seasonal Changes <i>I am an climate scientist: I study how the different seasons impact our environment.</i> Topic: Explorers Big Question: Do seasons affect habitats? NC: <ul style="list-style-type: none"> observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies. Sticky Knowledge: -There are four seasons, Spring, summer, autumn and winter -Each season is about three months long -In Spring, young animals like lambs and chicks are born, the flowers bloom and the weather starts to become warmer. -In autumn, the leaves fall off the trees and the amount of time we have in the day becomes less. -Winter has the shortest amount of time during the day and the weather is at its coldest. -In summer the trees are full of green leaves and the weather is at its warmest. -Animals and plants have adapted ways of surviving the changing seasons. These include hibernating,		Unit: Materials <i>I am an engineer: I study materials.</i> Topic: A Day in the Toy Museum Big Question: What is the best material for a toy? NC: <ul style="list-style-type: none"> 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. Sticky Knowledge: There are many different materials that have different observable properties Materials that have similar properties are grouped into metals, rocks, fabrics, wood, plastic and ceramics (including glass). Key Vocab:		Unit: Animals inc. Humans <i>I am a biomedical scientist. I study how the human body works.</i> Topic: Animal Adventures Big Question: How do we use our senses to understand our environment? NC: <ul style="list-style-type: none"> identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Sticky Knowledge: -The five sense organs are the eyes (for seeing), nose (for smelling), ears (for hearing), tongue (for tasting), and skin (for touching or feeling). - Animals have senses to help them survive - Animals have developed a range of ways to find prey or avoid being eaten Key Vocab:		Unit: Understanding the world <i>The Natural World: Plants</i> Big Question: What is your favourite animal?		Unit: Understanding the world <i>The Natural World</i> Big Question: What are plants?	
	Unit: Plants <i>I am a botanist: I study plants.</i> Topic: West End Wanderers Big Question: How do plants get what they need to survive? NC: <ul style="list-style-type: none"> identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Sticky Knowledge: -To survive plants, need to get water, light, and avoid being eaten -A seed produces roots to allow water to get into the plant. - A seed produces shoots to produce leaves to collect the sunlight. -A basic plant structure can include leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem. Key Vocab:		Unit: Animals including humans <i>I am a zoologist. I study animals.</i> Topic: Big Bad Wolf Big Question: How do animals differ? NC: <ul style="list-style-type: none"> identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals that are carnivores, herbivores and omnivores describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) Sticky Knowledge: -There are many different groups of animals including fish, amphibians, reptiles, birds and mammals. -The structure of a variety of common animals varies Mammals have hair/fur and give birth to live young, fish can breathe underwater using gills, birds have feathers, beaks and wings. Females lay eggs. Most birds can fly, reptiles are air breathing and have scaly skin and lays eggs, and amphibians									

			<p>storing food, fattening up, migration, loss of leaves</p> <p>Key Vocab: spring, summer, autumn, winter, wind, snow, hail, rain, weather, grow, daylight</p>			<p>have smooth slimy skin and live on land and in water.</p> <p>-Some eat other animals (carnivores), and others only eat vegetables (herbivores), and some like to eat both plants and meat (omnivores)</p> <p>-Common animals that are carnivores include lions, cats, sharks and snakes</p> <p>-Common animals that are herbivores include cows, horses, sheep, elephants and deer</p> <p>-Common animals that are omnivores include humans, bears, monkeys and seagulls</p> <p>Key Vocab:</p>
<p>Year 2</p>	<p>Unit: Animals, including humans <i>I am a Entomologist: I study insects.</i> Topic: Journeys</p> <p>Big Question: How does a caterpillar become a butterfly?</p> <p>NC: -notice that animals, including humans, have offspring which grow into adults - find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Sticky Knowledge: - Animals grow until they reach maturity and then don't grow any larger -Animals grow until they reach maturity and then don't grow any larger - All animals eventually, die - Different animals live to different ages</p>	<p>Unit: Animals, including humans <i>I am a nutritionist: I study diet and health.</i> Topic: Great Fire of London</p> <p>Big Question: How do we keep ourselves healthy?</p> <p>NC: - describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p>Sticky Knowledge: - Exercise, eating the right amounts of different types of food and hygiene are important to maintain good health and wellbeing</p> <p>Key Vocab:</p>	<p>Unit: Living things and their habitats <i>I am an ecologist: I study the relationship between living things and the environment.</i> Topic: Famous Landmarks</p> <p>Big Question: How are animals adapted to their own habitats?</p> <p>NC:</p> <ul style="list-style-type: none"> 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 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. Identify and name a variety of plants and animals in their habitats, including micro habitats <p>Sticky Knowledge: -Habitats are places where animals and plants live</p>	<p>Unit: Living things and their habitats <i>I am a biologist: I study living things.</i> Topic: Titanic</p> <p>Big Question: Is a flame alive?</p> <p>NC: - explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>Sticky Knowledge: -Things that are living, move, feed, grow, reproduce and use their senses</p> <p>Key Vocab:</p>	<p>Unit: Uses of everyday materials <i>I am an engineer: I study materials.</i> Topic: Rwanda</p> <p>Big Question: Why do we choose materials to do certain jobs?</p> <p>NC: -identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses - find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p>Sticky Knowledge: - Materials can be changed by physical force (twisting, bending, squashing and stretching). - The properties of a material determine whether they are suitable for a purpose.</p> <p>Key Vocab:</p>	<p>Unit: Plants <i>I am a botanist: I study plants.</i> Topic: Things that Grow</p> <p>Big Question: What do plants need to grow successfully?</p> <p>NC: - 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.</p> <p>Sticky Knowledge: -Plants need water, light and a suitable temperature to grow and stay healthy -Some plants die after it has produced its seed (annual) and sometimes the plant lives for many generations producing seeds each year (perennial) -All flowering plants make seeds (reproduction) that can grow (germinate) into new plants</p> <p>Key Vocab:</p>

	<p>-Different animals reach different sizes before they are able to reproduce -Different animals reproduce at different ages -Animals, including humans, have offspring which grow into adults - Animals including humans have basic needs to survive (food, water, air)</p> <p>Key Vocab:</p>		<p>-Animals live in habitats in which they are suited. - Different kinds of animals and plants depend on each other within habitat. -Animals get their food from plants and other animals. This can be shown in a food chain. -A food chain begins with a producer. This is often a green plant because plants can make their own food. A living thing that eats other plants is called a consumer.</p> <p>Key Vocab:</p>			
<p>Year 3</p>	<p>Unit: Animals, including humans <i>I am a biomedical scientist: I study how the human body works.</i></p> <p>Topic: Africa</p> <p>Big Question: Why is our skeleton and muscle important?</p> <p>NC: -identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat -identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>Sticky Knowledge: -All vertebrates have internal skeletons that protect vital organs. - Invertebrates have exoskeletons that protect vital organs -All vertebrates have internal skeletons that protect vital organs.</p>	<p>Unit: Forces and magnets <i>I am a physicist: I study magnets.</i></p> <p>Topic: Iron Man</p> <p>Big Question: How are magnets used in everyday life?</p> <p>NC: -compare how things move on different surfaces -notice that some forces need contact between two objects, but magnetic forces can act at a distance -observe how magnets attract or repel each other and attract some materials and not Others -compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials -describe magnets as having two poles -predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Sticky Knowledge: -Magnets exert attractive forces on some metals</p>	<p>Unit: Rocks <i>I am a geologist: I study rocks.</i></p> <p>Topic: Stone age</p> <p>Big Question: What on earth is a rock?</p> <p>NC: -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</p> <p>Sticky Knowledge: -A rock is a solid material made up of minerals forming part of the surface of the Earth -Rocks are exposed on the surface at cliffs, hills and mountains but are also under the surface. -Some rocks, called ores contain metals -Some rocks are made of grains squashed together and can contain the remains of long-dead organisms, called fossils. This type of rock is called sedimentary rock, an example would be limestone, sandstone or mudstone -Some rocks are made of crystals that are locked tightly together. These are called igneous and</p>	<p>Unit: Plants <i>I am a botanist: I study plants.</i></p> <p>Topic: Stone Age</p> <p>Big Question: How do plants make their food?</p> <p>NC: -identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers -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.</p> <p>Sticky Knowledge: -Plants do not eat food so have to make their own. -This food provides them with energy, and materials to grow -To make the food (sugar) plants need water from the ground, carbon dioxide from the air and light from the sun. -The water is taken up through the roots from the soil The carbon dioxide is taken in through the leaves -As well as food, plants also make oxygen which is given out back into the air through the leaves</p> <p>Key Vocab: Pollen, pollination, photosynthesis, seed formation, seed dispersal,</p>	<p>Unit: Plants <i>I am a botanist: I study plants.</i></p> <p>Topic: Romans</p> <p>Big Question: What happens when certain elements are taken away from a plant?</p> <p>NC: - 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</p> <p>Sticky Knowledge: -Light: too little light and the seedling will elongate and become tall, weak and spindly. They can't carry out their normal function of making food. -In absence of nutrients, the growing plant is unable to make a wide range of chemicals needed for normal growth, in particular proteins. As a result, growth is poor and the plants are stunted, often of abnormal colours and they may survive for just a few weeks. - Low temperature: Many plants can survive in quite low temperatures, but they grow more slowly.</p> <p>Key Vocab:</p>	<p>Unit: Light <i>I am an optic physicist: I study the behaviour of light.</i></p> <p>Topic: Hampshire</p> <p>Big Question: Why can you see your reflection in a mirror but not the floor?</p> <p>NC: -recognise that they need light in order to see things and that dark is the absence of light -notice that light is reflected from surfaces -recognise that light from the sun can be dangerous and that there are ways to protect their eyes -recognise that shadows are formed when the light from a light source is blocked by an opaque object -find patterns in the way that the size of shadows change.</p> <p>Sticky Knowledge: -There must be light for us to see. -Light comes from a source. -We need light to see things, even shiny things. -Light from the sun can be dangerous and that there are ways to protect their eyes If an object is transparent light will go through it and we will be able to see through it.</p>

	<p>-Invertebrates have exoskeletons that protect vital organs Bones are connected (but can move relative to each other) at joints. -Muscles connect to bones and move them when they contract. -Stronger bones can anchor stronger muscle -Humans require a balanced diet to remain healthy but healthy diets vary depending upon the type of activity that humans do</p>	<p>- Magnetic forces work through other materials including air, so magnets don't need to be touching to exert their force. It is called a non-contact force - Each end of a magnet is called a pole, opposite poles are called north and south. -Magnets exert attractive forces on each other when the poles facing each other are north and south (opposites). -Magnets exert repulsive forces on each other when the poles facing each other are the same -The strength of magnetic forces is affected by: The strength of the magnet. The distance between the magnet and the object. The material the object is made from</p> <p>Key Vocab:</p>	<p>metamorphic rocks; an example of igneous rock is granite, and an example of metamorphic rock is slate. - These three types of rocks all have different properties to each other, including porosity, hardness, reaction to chemicals -Soil is made up of small broken-down pieces of rock. -Soil contains a range of different size rock pieces, e.g., sand grains or stones. -Soil also contains humus (rotted plant material) -Soil made of very fine rock is called silt or clay.</p> <p>Key Vocab: Sedimentary, igneous, metamorphic, appearance, erosion, flesh, fossil, mineral, physical, rock, rough, soil</p>	<p>nutrients, flowers, leaves, stem, root, trunk</p>		<p>-If an object is opaque, it will block the light and no light will get through. This is what forms shadows. -The closer to the light source an object is, the bigger the shadow will be. This is because the object blocks more of the light. -The further away from the light source an object is, the smaller the shadow will be. This is because the object blocks less of the light. -If an object is perfectly reflective light will bounce back off it and we will see reflections of objects. -If the material is translucent, it will allow light through, but we won't be able to see through it.</p> <p>Key Vocab:</p>
<p>Year 4</p>	<p>Unit: Living things and their habitats <i>I am a biologist: I study classification.</i> Topic: Scandinavia</p> <p>Big Question: What is classification? NC: -recognise that living things can be grouped in a variety of ways -explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment -recognise that environments can change and that this</p>	<p>Unit: States of matter <i>I am a material scientist: I study the properties and structure of materials.</i> Topic: Victorians</p> <p>Big Question: How do materials change state? NC: -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</p>	<p>Unit: Animals including humans <i>I am a biomedical scientist. I study how the human body works.</i> Topic: Charlie and the Chocolate Factory</p> <p>Big Question: How does the body get nutrients from food into the bloodstream? NC:</p> <ul style="list-style-type: none"> 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 	<p>Unit: Sound <i>I am a physicist: I study sound.</i> Topic: Anglo Saxons</p> <p>Big Question: How is sound produced? NC: -identify how sounds are made, associating some of them with something vibrating</p> <ul style="list-style-type: none"> recognise that vibrations from sounds travel through a medium to the ear <p>Sticky Knowledge: -Sounds can be produced in a variety of ways. -Sounds have the properties of pitch and volume.</p>	<p>Unit: Sound <i>I am a physicist: I study sound.</i> Topic: Raging Rivers</p> <p>Big Question: How does sound travel? NC: -find patterns between the pitch of a sound and features of the object that produced it -find patterns between the volume of a sound and the strength of the vibrations that produced it -recognise that sounds get fainter as the distance from the sound source increases.</p>	<p>Unit: Electricity <i>I am an electrical engineer: I study electricity.</i> Topic: Vikings</p> <p>Big Question: What are electric circuits and how do they work? NC: -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</p>

can sometimes pose dangers to living things.

Sticky Knowledge:

- Living things can be divided into groups based upon their characteristics
- Classification keys help group, identify and name living things
- Animals can be classified as vertebrates (having a spine) or invertebrates (lacking a spine)
- In any habitat there are food chains and webs where nutrients are passed from one organism to another when it is eaten
- If the population of one organism in the chain or web is affected, it has a knock-on effect to all the others
- Environmental change affects different habitats differently
- Human activity significantly affects the environment
- Different organisms are affected differently by environmental change

Key Vocab:

condensation in the water cycle and associate the rate of evaporation with temperature

Sticky Knowledge:

- Materials can be divided into solids, liquids and gases. Solids hold their shape unless forced to change. Liquids flow easily but stay in their container because of gravity. The more viscous a liquid the less runny it is. Gases move everywhere and are not held in containers by gravity.
- Heating causes solids to melt into liquids and liquids to evaporate to gases.
- Cooling causes gases to condense to liquids and liquids to freeze to solids.
- Different substances change state at different temperatures but the temperatures at which given substances changes state is always the same.
- The temperature at which a substance melts from a solid to a liquid is the same at which it freezes from a liquid to a solid.
- The temperature at which a substance boils from a liquid to a gas is the same at which it condenses from a gas to a liquid.
- Liquids evaporate slowly, even below their boiling temperatures.
- The water cycle is the process by which water is continuously transferred between the surface of the earth and the atmosphere.
- Liquid water evaporates into water vapor, condenses to form clouds, and precipitates back to earth in the form of rain and snow

Key Vocab:

Sticky Knowledge:

- Different animals require different foods to survive.
- Animals get their food from plants and other animals. This can be shown in a food chain. (From Year 2)
- A food chain begins with a producer. This is often a green plant because plants can make their own food. (From Year 2)
- A living thing that eats other plants is called a consumer. (From Year 2)
- Humans require a balanced diet to remain healthy but healthy diets vary depending upon the type of activity that humans do.
- Humans have 2 sets of teeth in their lifetimes
- Humans have three main types of teeth- incisors, canines and molars.
- Incisors help to bite off and chew pieces of food.
- Canines are used for tearing and ripping food.
- Molars help to crush and grind food

Key Vocab:

Mouth, tongue, oesophagus, stomach, small intestine, large intestine, molar, canine, incisor, herbivore, carnivore

- When a sound is produced it spreads out from its source in all directions
- Sound is caused by vibration (objects move rapidly back and forth or up and down)
- When objects vibrate it makes the objects in contact with it also vibrate. This includes the air.
- The vibration travels through the air and makes other objects it is in contact with vibrate including your ear drum.

Key Vocab:

Sticky Knowledge:

- Pitch and volume are caused by how the material vibrates
- The pitch of a sound is caused by how fast an object vibrates. This is called the frequency of vibration. Higher the frequency, higher the pitch
- Smaller objects or tighter strings tend to vibrate with a higher frequency
- The volume of sound is caused by how big each vibration is. This is called the amplitude of vibration. The bigger the amplitude the higher the volume.
- Sounds get fainter as the distance from the sound source increases.

Key Vocab:

-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.

Sticky Knowledge:

- Lots of devices are powered by electricity
- Electricity comes from a source
- There are two main sources- batteries and mains
- A battery pushes electricity to the device.
- To be able to push electricity the battery must be connected to the device using wires. This is called a circuit.
- If there are more batteries added to a circuit this provides a bigger push on the electricity
- This will make the device work harder e.g., brighter bulbs, faster spinning motor, louder buzzer
- Some materials will allow electricity to flow through them- Conductors. Metals such as silver, gold and copper are good conductors. Water is also a conductor of electricity.
- Other materials will not allow electricity to flow through them- Insulators
- Plastic, wood, glass and rubber are good electrical insulators. That is why they are used to cover materials that carry electricity.
- A switch opens and closes a circuit

Key Vocab:

Unit: Properties and changes of materials
I am a materials scientist: I study the properties and structure of materials.

Topic: South America

Big Question: Are there some changes we can't reverse?

NC:

-compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets

-know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

-use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

-give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic

-demonstrate that dissolving, mixing and changes of state are reversible changes

-explain that some changes result in the formation of new materials, and that this kind of change is not

Unit: Forces

I am a physicist: I study magnetism.

Topic: WW1

Big Question: Why is the tank stuck?

NC:

-Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object

-identify the effects of air resistance, water resistance and friction, that act between moving surfaces

-recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Sticky Knowledge:

-When objects move through air and water, they have to push it out of the way. The water and air push back with forces called water resistance and air resistance. The harder it is to push the material out of the way the greater the resistance.

-Gases weigh less than liquids and so water resistance is greater than air resistance.

Friction is a force against motion caused by two surfaces rubbing against each other. It occurs because no surfaces are perfectly smooth; they have bumps and undulations that can interlock when placed on top of each other.

-To move one interlocking surface over another, one of three things must happen: 1. The surfaces must rise slightly 2. The

Unit: Earth and space

I am an astronomer: I study out of space, the solar system and its objects

Topic: Extreme Earth

Big Question: What is Earth's address in space?

NC:

-describe the movement of the Earth, and other planets, relative to the Sun in the solar system

-describe the movement of the Moon relative to the Earth

Sticky Knowledge:

-A Solar system is a collection of planets, which orbit (a curved path) a star.

-There are huge number of stars in space and therefore a huge number of solar systems

-Our solar system consists of 8 planets, many of those planets have moons which orbit around them.

-Earth's moon is not a planet but is a satellite which orbits Earth. It is around a quarter of the size of Earth.

-As the Moon orbits the Earth, the Sun lights up different parts of it, making it seem as if the Moon is changing shape. We call these the phases of the moon.

-The Moon doesn't emit (give off) light itself, the 'moonlight' we see is actually the Sun's light reflected off the lunar surface.

Key Vocab:

Unit: Living things and their habitats

I am a biologist: I study different animals.

Topic: Ancient Greece

Big Question: What is a lifecycle in biology?

NC:

-describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird

-describe the life process of reproduction in some plants and animals.

Sticky Knowledge:

- asexual reproduction is when one parent is needed to create an offspring, which is an exact copy of the parent.

-Fertilisation is the action of fusing the male and female sex cells in order to develop an egg

- gestation is the length of a pregnancy

- (recap) A lifecycle is the journey of changes that take place throughout the life of a living thing including birth, growing up and reproduction.

- metamorphosis is an abrupt and obvious change in the structure of an animal's body and their behaviour.

- pollination is the transfer of pollen to a stigma to allow fertilisation.

- reproduction is the process of new living things being made.

- sexual reproduction is when Two parents are needed to make offspring which are similar but not identical to either parent.

Key Vocab:

Unit: Earth and space

I am an astronomer: I study out of space, the solar system and its objects.

Topic: Lost in the Universe

Big Question: How and why do the spherical bodies move in our solar system?

NC:

-describe the Sun, Earth and Moon as approximately spherical bodies

-use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Sticky Knowledge:

-Our solar system can be represented with a model (see diagram), but it isn't possible to draw it to scale.

-The planets and moons are rotating (spinning)

-The time it takes one planet to rotate is called a day. On Earth this is 24 hours

-The time it takes a planet to complete one orbit around its star is called a year. On Earth this is 365.25 days

-The solar system is with a massive collection of stars called the galaxy (called the Milky way)

-The Milky way is one of billions of galaxies in the Universe.

-Stars are huge balls of gas that produce vast amounts of light and heat.

-Asteroids are lumps of rock that orbit a star (there are millions in between Mars and Jupiter)

-Comets are objects that are made of Ice, which melts when they get closer to the sun leaving a tail.

Key Vocab:

Star, planet, moon, satellite, spherical, heliocentric, geocentric, sphere, shadow,

Unit: Animals including humans

I am a biologist: I study how the human body works.

Topic: Egyptians

Big Question: Why do some people have children?

NC:

describe the changes as humans develop to old age.

Sticky Knowledge:

-Adolescence is the social and emotional stage of development between childhood and adulthood.

-Puberty is the physical stage of development between childhood and adulthood

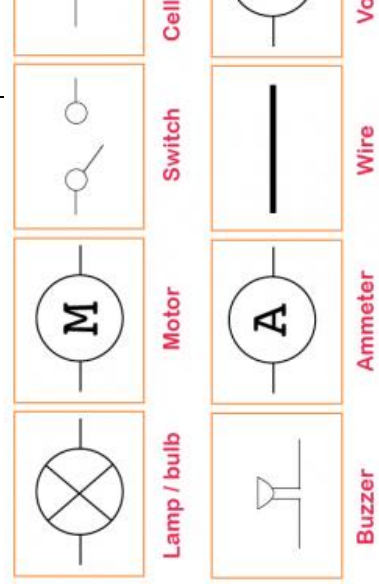
-Menstruation is when the female body discharges the lining of the uterus. This happens approximately once a month.

- life expectancy is the length of time, on average, that a particular animal is expected to live

Key Vocab:

	<p>usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p> <p>Sticky Knowledge: - Different materials are used for particular jobs based on their properties: electrical conductivity, flexibility, hardness, insulators, magnetism, solubility, thermal conductivity, transparency. - Reversible changes, such as mixing and dissolving solids and liquids together, can be reversed by sieving, filtering and evaporating. - Irreversible changes often result in a new product being made from the old materials (reactants).</p> <p>Key Vocab:</p>	<p>bumps on the surface must bend 3. The bumps on the surface must break All of these actions require a force, this is what causes friction.</p> <p>-Some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move. -The use of levers can reduce the force needed to move things. The object you are lifting is called the load, and the force you apply to the arm to make the object move is called the effort. -The use of pulleys can reduce the force needed to move things</p> <p>Key Vocab:</p>			<p>revolution, orbit, celestial, lunar, galaxy, solstice, eclipse</p>	
<p>Year 6</p> <p>- A n i m a</p>	<p>Unit: Light <i>I am an optic physicist: I study the behaviour of light.</i> Topic: Asia and Great Britian Big Question: What would we do without light? NC:</p>	<p>Unit: Electrical circuits <i>I am an electrical engineer. I study and control how different circuits are impacted.</i> Topic: Climate Project</p>	<p>Unit: Living things and their habitats <i>I am a biologist: I study classification.</i> Topic: WW2 Big Question: How and why do we classify living things?</p>	<p>Unit: Evolution and Inheritance <i>I am an evolutionary biologist. I study evolution and inheritance.</i> Topic: Evolution and Inheritance</p>	<p>Unit: Animals including humans <i>I am a biomedical scientist: I study how the human body works.</i> Topic: Moving On and Changing</p>	

<p>I s</p>	<p>-recognise that light appears to travel in straight lines</p> <p>-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</p> <p>-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</p> <p>-use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p>Sticky Knowledge:</p> <p>-When light is emitted from a light source, it travels in straight lines until it hits an object. This can be represented by an arrow.</p> <p>-Shadows form when light hits an opaque object, the area behind is in darkness because light can only travel in straight lines.</p> <p>-Shadows have the same shape as the objects that cast them</p> <p>- When light hits a transparent object, it goes through it in a straight line so we can see a clear image through it.</p> <p>-When light hits a translucent material, it goes through it but is scattered, this means light can pass through, but we can't see an image through it.</p> <p>-When light hits a mirrored surface, it reflects off it in straight lines, so we can see an image in the reflective material.</p> <p>-Sometimes when light hits a material it reflects off it in many different directions (it is scattered). In this case light will be reflected but no image will be seen in the material.</p> <p>-Shiny surfaces are better reflectors and rough surfaces scatter light more. Opaque objects don't allow any light to pass through them.</p> <p>Key Vocab:</p>	<p>Big Question: <u>How can electrical circuits be controlled?</u></p> <p>NC:</p> <p>-associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>-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</p> <p>-use recognised symbols when representing a simple circuit in a diagram.</p> <p>Sticky Knowledge:</p> <p>-Current is the flow of electricity around a circuit.</p> <p>-The power supply in a circuit pushes the current round the circuit</p> <p>-The voltage of the power supply is a measure of this push</p> <p>-Voltage is measure in volts</p> <p>-Batteries have a limited store of energy and when this is gone, they can no longer push the current</p> <p>-Current is the flow of electricity through a conductor</p> <p>-When current passes through a device it makes it work</p> <p>-Increasing the voltage (the number of cells in the battery) increases the current. The larger the flow of current, the harder the device works</p> <p>- All parts of a circuit offer resistance to electrical current including the wires.</p> <p>-Resistance is the slowing down of electrical current</p> <p>-The more devices added into a circuit the greater the resistance</p> <p>-This means less current flows around the circuit</p> <p>Key Vocab: Branch, bulb, buzzer, charge, component, current, motor, switch, voltage</p>	<p>NC:</p> <p>-describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals</p> <p>-give reasons for classifying plants and animals based on specific characteristics.</p> <p>Sticky Knowledge:</p> <p>- Living things can be grouped according to different criteria (where they live, what type of organism they are, what features they have). For example, a camel can belong in a group of vertebrates, a group of animals that live in the desert, and a group of animals that have four legs.</p> <p>-A classification key is a tool that is used to group living things to help us identify them using recognisable characteristics.</p> <p>-The Linnaean system, named after Carl Linnaeus, has different levels where the number of living things in each group gets smaller and smaller, until there will just be one type of animal in the species group.</p> <p>-Microorganisms are very tiny organisms where a microscope has to be used to see them.</p> <p>-Examples of microorganisms include dust mites, bacteria, and fungi, such as mould.</p> <p>-Some microorganisms can be helpful in certain situations. Others can be harmful, and their spread needs to be controlled or contained.</p> <p>Key Vocab:</p>	<p>Big Question: <u>What is evolution & how does it help survival?</u></p> <p>NC:</p> <p>- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>-recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>-identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>Sticky Knowledge:</p> <p>-Adaptation is when animals and plants have evolved so that they have adapted to survive in their environments. For example, polar bears have a thick layer of blubber under their fur to survive the cold, harsh environment of the Arctic while giraffes have long necks to reach the leaves on trees.</p> <p>-Some environments provide challenges, yet some animals and plants have adapted to survive there</p> <p>-Sometimes adaptations can be disadvantageous, one example of this can be the dodo, which became extinct as it lost its ability to fly through evolution. Flying was unnecessary for the dodo as it had lived for so many years without predators, until its native island became inhabited. When adaptations are more harmful than helpful, these are called maladaptation</p> <p>-Evidence of evolution comes from fossils when these are compared to living creatures from today, palaeontologists</p>	<p>Big Question: <u>What does my blood do?</u></p> <p>NC:</p> <p>-identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>-recognise the impact of diet, exercise, drugs and lifestyle on the way their body's function</p> <p>-describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Sticky Knowledge:</p> <p>-The heart is a vital organ pumps blood through the blood vessels.</p> <p>-Blood Vessels are the tubes that blood flows through.</p> <p>-The blood circulates around the body in a way that ensures all muscles in the body get a supply of oxygen and sugar.</p> <p>-The heart pumps blood to every muscle in the body. The circulatory route must allow the blood to collect oxygen from the lungs, sugar from the intestines and visit muscles.</p> <p>-The blood then returns to the heart where it is pumped again.</p> <p>-Exercise helps the heart to work more efficiently.</p> <p>-Eating a healthy diet helps to keep the blood vessels from getting blocked.</p> <p>-Avoiding smoking and alcohol puts less stress on the whole system and keeps it healthier</p> <p>Key Vocab:</p>
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can compare similarities and differences. -Other evidence comes from living things comparisons of some species may reveal common ancestors.

- Evolution is a process of change that takes place over many generations, during which species of animals, plants, or insects slowly change some of their physical characteristics. This is because offspring are not identical to their parents.
- It occurs when there is competition to survive. This is called natural selection. -
- Difference within a species (for example between parents and offspring) can be caused by inheritance and mutations.
- Inheritance is when characteristics are passed on from generation to the next.
- Mutations in characteristics are not inherited from the parents and appear as new characteristics.

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