

Year 3
Autumn 1

Animals Including Humans					
Lesson Sequence					
Identify that animals, including humans cannot make their own food and need to get nutrition from what they eat.	Identify that animals, including humans, need the right types and amount of nutrition. Look at food groups and how to eat a balanced diet.	Identify that humans and some other animals have skeletons to support/protect their body. Introduce vertebrates and invertebrate	Identify that humans and some other animals have skeletons to support/protect their body. Look at human skeletons - identify bones and their purposes.	Look at joints and how these work to allow movement.	Identify that humans and some other animals have muscles and look at how they help with movement.
Substantive Knowledge					
Animals (including humans) can't make their own food, they get food by growing, hunting or gathering it. Nutrition means getting the food needed to grow and be healthy.	The human body needs a balanced diet to work properly. You need the right amount of food from the different food groups. Fruit and vegetables - Contain fibre which helps us to digest food Carbohydrates – give us energy e.g. bread, potatoes, pasta Proteins – help our bodies to repair e.g. fish, meat, nuts, seeds, eggs and cheese Fats – help store energy for our bodies e.g. butter, cheese, fried foods	Mammals, birds, fish, reptiles, amphibians are vertebrates this means they have a skeleton inside their body. Invertebrates means they don't have a skeleton inside their bodies. Some examples of these are spiders, snails, jellyfish, crabs, worms.	The skeleton is made of bones. This protects and supports the body. Skull – protects the brain Rib cage – protects major organs (e.g. heart, lungs) Humerus, radius, ulna – bones in your arms Femur, tibia, fibula – bones in your legs	Joints are where two or more bones join together. The skeleton can bend at these joints e.g. knees, elbows. Know the terms: ball and socket joint, hinge joint and gliding joint.	Muscles are attached to the skeleton to help us move. They contract and relax as they move with the bones. Know that contraction means to get smaller and expansion means to get bigger.

Disciplinary Knowledge					
Methods: <u>Research</u> Research is an investigation or study to find out facts in order to reach a conclusion. Data analysis: Know that you can present information from research as pictures with labels to make it easier to understand. Know that information texts use scientific language. Evidence to develop explanations: Know that scientific evidence has been used to classify how animals, including humans, get their food.	Methods: <u>Identify and classify</u> To identify and classify, you make observations and collect data to find similarities and differences. This help to organise things into groups and make connections. Apparatus & techniques: A ruler is a tool used to draw straight lines. Axis are used to label areas of the bar chart to enable the reader to understand what is being shown. Data analysis: Know that tally charts are the best way to collate numbers quickly and effectively. Know that bar charts show results clearly so that conclusions can be made. Know that you need to use scientific language when identifying and classifying. Evidence to develop explanations:	Methods: <u>Research</u> Research is an investigation or study to find out facts. Data analysis: Know that you can present information from research in a table to make it clearer and easier to understand. Evidence to develop explanations: Know that information texts use scientific language. Know that scientific evidence has been used to classify vertebrates and invertebrates, including exoskeletons and hydroskeletons.	Methods: <u>Research</u> Research is an investigation or study to find out facts in order to reach a conclusion. Apparatus & techniques: A ruler is a tool used to measure length. Centimetre is a unit of measurement. Meter is a unit of measurement Data analysis: Know that you can present information from research in a table to make it clearer and easier to understand.	Methods: <u>Comparative testing</u> Comparative testing is a way of making direct comparisons between different things. Pattern seeking Pattern seeking is when you carry out a simple test or observe closely to look for patterns in your results. Data Analysis: Know that you can present information from research in a table to make it clearer and easier to understand. Know that you can present information from pattern seeking in a table to make it clearer and easier to understand. Evidence to develop explanations: To draw a scientific conclusion you need to look at your results and identify patterns.	Methods: <u>Research</u> Research is an investigation or study to find out facts in order to reach a conclusion Evidence to develop explanations: To draw a scientific conclusion you need to look at your results.

	To draw a scientific conclusion you need to look at your results and identify patterns.				
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Year 3
Autumn 2

Rocks and Soil					
Lesson Sequence					
Introduce the idea that the earth is made up of many layers including rocks and soil. Introduce sedimentary, metamorphic and igneous rocks and look at how these are formed.	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.	Introduce terms permeable and impermeable and carry out investigations to find which rocks can be classified.	Look at common rocks and classify into the three different types. Look at common uses of these rocks and why the type of rock is suitable for its use.	Describe in simple terms how fossils are formed when things that have lived are trapped within rocks. <i>Link to Mary Anning as a famous fossil hunter.</i>	Look at how soil forms the top layer of the Earth. Recognise that soils are made from rocks and organic matter. Look at the types of soil and their properties. (Sandy, clay, loam).
Substantive Knowledge					
Children can identify the 3 different types of rock and know how they are formed. Sedimentary: rock made from layers of sediment that have formed through pressure. Igneous: formed when molten lava cools and solidifies. Metamorphic: When sedimentary rock is changed due to heat and pressure.	Children can identify the three types of rocks from their appearance: Sedimentary – small grains, layers, soft Igneous – shiny, crystals, air bubbles Metamorphic – layers,, crystals, hard	Permeable is when a material absorbs liquid. Impermeable is when a material does not absorb a liquid.	Children can identify the following rocks and classify them into either sedimentary, igneous or metamorphic: Sedimentary: sandstone, chalk, limestone Igneous: granite, basalt Metamorphic: slate, marble	Understand how fossils are formed over millions of years: 1. An animal dies and the soft parts of the body rot away. 2. The remains get buried under layers of sediment. 3. The sediment around the bones are pressurised into sedimentary rock. 4. The bones start to be dissolved by water (as sedimentary rock is permeable) 5. Materials in the water replace the bones, making a rock replica of the bones.	Soil makes up the top layer of the Earth's crust and is made from rocks and organic matter.

Disciplinary Knowledge					
Methods: <u>Identify and Classify</u> Classifying is when you sort items into groups based on similarities and differences. Identifying means that you find out what something is. Observing means to look closely. Data analysis: Know that you can present information as pictures with labels to make it easier to understand. Evidence to develop explanations: Know that scientific evidence has been used to classify different types of rocks and how they are formed.	Methods: <u>Identify and Classify</u> Classifying is when you sort items into groups based on similarities and differences. Identifying means that you find out what something is. Observing means to look closely. Apparatus & techniques: A ruler is a tool used to draw straight lines. Data analysis: When you collect data it needs to be presented in a way that is clear and easy to understand. A table is a simple way to present data. Evidence to develop explanations: Know that evidence can be used to draw conclusions to classify rocks from their appearance.	Methods: <u>Research</u> Research is an investigation or study to find out facts in order to reach a conclusion. <u>Comparative Testing</u> A comparative test is when you test and compare different cases and situations. Apparatus & techniques: A ruler is a tool used to draw straight lines. Data analysis: Know that you can present information from research in a table to make it clearer and easier to understand. A table is a simple way to present data. Evidence to develop explanations: Know that evidence can be used to draw conclusions to classify rocks from their appearance. To draw a scientific conclusion you need to look at your results and identify patterns.	Methods: <u>Identify and Classify</u> Classifying is when you sort items into groups based on similarities and differences. Identifying means that you find out what something is. Observing means to look closely. <u>Comparative Testing</u> A comparative test is when you test and compare different cases and situations. Using existing knowledge, you can make a prediction about what the outcome of your scientific enquiry will be Apparatus & techniques: A ruler is a tool used to draw straight lines. Know that you can present information from research in a table to make it clearer and easier to understand. Data analysis: A table is a simple way to present data.	Methods: <u>Identifying and Classifying</u> Identifying means that you find out what something is. Observing means to look closely. Classifying is when you sort items into groups based on similarities and differences. Data analysis: A diagram is a picture that is usually labelled. Evidence to develop explanations: Know that a conclusion is when you answer a question using what you have found out in your scientific enquiry.	Methods: <u>Comparative Testing</u> A comparative test is when you test and compare different cases and situations. A scientific enquiry is carried out to answer a scientific question. <u>Observation over time</u> Observing over time is when you make systematic and careful observation to identify and measure changes in materials over a period of time. Apparatus & techniques: Regular observations/measurements need to be made at set intervals You can measure the volume of a liquid using a measuring cylinder. The volume of a liquid is measured in milliliters and litres. 1litre = 1000ml You can measure the amount of a solid in teaspoons.

			Evidence to develop explanations: Know that evidence can be used to draw conclusions to classify rocks from their appearance. Know that results from a scientific enquiry can be used to answer a scientific question. To answer a scientific question, you should include evidence from your scientific enquiry. Know that conclusions drawn from scientific enquires can be used to make recommendations.		Data analysis: When you collect data it needs to be presented in a way that is clear and easy to understand. You can use time-lapse on an iPad to observe changes over time. Evidence to develop explanations: Know that results from a scientific enquiry can be used to answer a scientific question. To answer a scientific question, you should include evidence from your scientific enquiry. Know that you can gather, record and present data in a variety of ways to help answer a question. Know that findings from enquires can be reported in different ways e.g. orally, written, results presentation or as a conclusion. Know that a conclusion is when you answer a question using what you have found out in your scientific enquiry.
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Year 3
Spring

Forces and Magnets						
Lesson Sequence						
Understand a force as a push or pull.	Introduce term friction. Compare how things move on different surfaces depending on the amount of friction created.	Investigate pushes and pulls and how they make an object move.	Observe how magnets attract or repel each other. Describe magnets as having two poles.	Children learn that magnets have a north and south pole. They are then to investigate how magnets can attract and repel.	Observe how magnets attract or repel 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
Substantive Knowledge						
Some forces need contact with objects and this is push and pull .	An object will move differently on different surfaces due to friction (the resistance that one surface or object receives when moving over another) . An object will move more smoothly on the table or corridor floor compared to the carpet or grass.	Some forces need contact with objects and this is push and pull .	Some forces do not need contact with objects and can act at a distance. This is a magnetic force .	Some forces do not need contact with objects and can act at a distance. This is a magnetic force . A magnet has two poles. These are the North Pole and South Pole . The same poles repel each other but opposite poles attract . This is known as a magnetic force .	Magnets attract or repel each other. Magnets are attracted to iron, nickel and metals that contain iron e.g. steel . Magnets repel the following materials: copper, silver and gold	To know that a paper clip, a staple, the iPad locker are all magnetic. To know that tinfoil, door handles and copper coins are not magnetic.
Disciplinary Knowledge						
Methods: <u>Identifying and classifying</u>	Methods: <u>Fair test</u> A fair test is when one variable is changed	Methods: <u>Comparative testing</u>	Methods: <u>Pattern seeking</u> Pattern seeking is when you observe	Methods: <u>Fair test</u> A fair test is when one variable is changed	Methods: <u>Identifying and classifying</u> Classifying is when	Methods: <u>Fair testing</u> A fair test is when one variable is

Know that classifying is when you sort items into different groups based on their similarities and differences. Know that to identify and classify you need to observe closely. Know that you can sort activities/actions into push and pull forces. Data analysis: A Venn diagram uses circles to show the relationship between things. Where the circles cross over shows that the items sorted fit into both categories.	and the others remain constant. A variable is a factor that can be changed. Apparatus & techniques: We can measure mass using electronic scales. Grams and kilograms are units used for measuring mass. 1kg = 1000g We measure force using a Newton metre. Newtons is the unit of measure used for force. You can measure longer lengths using metre sticks. Centimetres and millimetres are units of measure we use for length. 1cm = 10mm. Metres is a unit of measure we use for length. 1m = 100cm	A comparative test is when you test and compare different cases and situations. A comparative test can be used to investigate the distance travelled when using a push forces applied by different parts of the body (foot stamping on bottles/blowing straws). Data analysis: A table is a clear way to present data collected when carrying out a comparative test. Evidence to develop explanations: To draw verbal conclusion	variables that cannot be controlled to notice patterns. Pattern seeking can be used to investigate whether you need contact with an object to make it move. Evidence to develop explanations: Observations from pattern seeking observations can be used to draw conclusions. Conclude that some forces do not need contact with objects and can act at a distance	and the others remain constant. A variable is a factor that can change. You can carry out a fair test to investigate how close a magnetic object needs to be to a magnet in order for it to attract. Apparatus & techniques: A magnet is an object that has a magnetic field. A magnet attracts and repels other items. Centimetres and millimetres are units of measure we use for length. 1cm = 10mm. Data analysis: When you collect data it needs to be presented in a way that is clear and easy to understand. A table is a simple way to present data. Evidence to develop explanations: Know that results from a scientific enquiry	you sort items into groups based on similarities and differences. You can classify materials as magnetic or non-magnetic. Apparatus & techniques: A magnet is an object that has a magnetic field. A magnet attracts and repels other items. Evidence to develop explanations: Know that a table is the best way to present the results when you identify and classify.	changed and the others remain constant. A variable is a factor that can change. Centimetres and millimetres are units of measure we use for length. 1cm = 10mm. Know that a Venn diagram and bar chart are different ways to present data. A Venn diagram uses circles to show the relationship between things. A bar chart is a chart that has rectangles of different sizes to represent values.
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	Data analysis: A table is a clear way to present data collected when carrying out a fair test. Evidence to develop explanations: Results from fair test can be used to answer a scientific question. Conclude that an object will need a lesser force to move it when there is less friction on the surface it is moving across.			can be used to answer a scientific question. To answer a scientific question, you should include evidence from your scientific enquiry		
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Light					
Lesson Sequence					
Understand that light comes from a light source (e.g. the sun). Recognise that they need light in order to see things and that dark is the absence of light.	Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.	Introduce the terms opaque, translucent and transparent. Investigate how different materials allow different amounts of light to pass through them.	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.	Investigate how light is reflected from surfaces.
Substantive Knowledge					
Dark is the absence of light. You need to use a light source to see objects. These include the sun, a torch and a light bulb.	Understand that the sun can be dangerous to our eyes and there are ways to protect your eyes such as wearing sunglasses and shades for your eyes.	Opaque is when you cannot see through something, transparent is when you can see through something and translucent is only when the light can be seen through something.	Opaque objects such as cups, tables and books create a shadow when they block the light source. .	Notice that the size of shadows increase the closer the light source depending on the distance of the light source to the object	Children understand that light can be reflected from surfaces such as the moon, a mirror and water.
Disciplinary Knowledge					
Methods: <u>Identifying and classifying</u> Classifying is when you sort items into groups based on similarities and differences. Items can be sorted into things that are light sources and non-light sources. Data analysis: Know that a table is the best way to present the	Methods: <u>Observation over time</u> Observing over time is when you watch or measure something over a period of time to see how it changes. You can observe the effects of a UV source (the sun) on a UV bead (skin) over time to help understand the importance of protection from the sun.	Methods: <u>Identifying and classifying</u> Classifying is when you sort items into groups based on similarities and differences. You can make careful observations to help you classify objects. Materials can be sorted into those that are: transparent, translucent and opaque.	Methods: <u>Fair test</u> A fair test is when one variable is changed and the others remain constant. A variable is a factor that can change. A fair test can be used to investigate how the length of a shadow changes depending on the distance the object is from the light source.	Methods: <u>Pattern seeking</u> Pattern seeking is when you observe variables that cannot be controlled to notice patterns. You can carry out a pattern seeking investigation to see which materials reflect light. You can use your observations from a pattern seeking enquiry to classify materials into reflective and non-reflective. Apparatus & techniques: A torch is a light source.	

results when you identify and classify.	Apparatus & techniques: UV beads change colour when exposed to a UV light source. A UV torch provides a UV ray which effects the UV beads. You can use time-lapse on an iPad to observe changes over time Data analysis: When you collect data it needs to be presented in a way that is clear and easy to understand. A table is a simple way to present data collected through an observation over time. A scientific diagram is a picture that is usually labelled. Evidence to develop explanations: Know that results from a scientific enquiry can be used to answer a scientific question. To answer a scientific question, you should include evidence from your scientific enquiry	Using existing knowledge, you can make a prediction about what the outcome of your scientific enquiry will be. Data analysis: Know that a table is the best way to present the results when you identify and classify. A scientific diagram is a picture that is usually labelled.	When carrying out a fair test it is important that you have a scientific question e.g. As the distance from the light source increases, will the height Using existing knowledge, you can make a prediction about what the outcome of your scientific enquiry will be Apparatus & techniques: You can measure longer lengths using metre sticks. Centimetres and millimetres are units of measure we use for length. 1cm = 10mm. Data analysis: When you collect data it needs to be presented in a way that is clear and easy to understand. A table is a simple way to present data collected in a fair test. A scientific diagram is a picture that is usually labelled. Evidence to develop explanations:	Data analysis: When you collect data it needs to be presented in a way that is clear and easy to understand. A table is a simple way to present data collected in a pattern seeking investigation. Evidence to develop explanations: Know that results from a scientific enquiry can be used to answer a scientific question. To answer a scientific question, you should include evidence from your scientific enquiry Conclude that some materials reflect light from a light source and some materials do not.
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			Know that results from a scientific enquiry can be used to answer a scientific question. To answer a scientific question, you should include evidence from your scientific enquiry Conclude that as the distance from the light source increases, the shadow size decreases.	
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Plants					
Lesson Sequence					
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 - carry out investigation to observe these requirements showing what happens if they are not all fulfilled.	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 - review results from investigation.	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.	Explore methods of seed dispersal.
Substantive Knowledge					
<u>Parts of a plants</u> The main parts of a plant are: flowers, leaves, stem and roots. Flowers – have colour and smell to attract insects Leaves – change carbon dioxide and water into food for the plant and oxygen. Stem – this holds the plant up and carries water to the rest of the plant. Roots – hold the plant in the ground and soak up water and minerals from the soil.	<u>Parts of a flower</u> A flower's job is to create seeds so that new plants can be grown. Anther –part that makes pollen. Filament –holds up the anther. Ovule – a small egg Stigma – takes in the pollen Style –Pollen travels down the style to the ovary. Ovary – contains the eggs Petal – brightly coloured and sweetly scented to attract insects.	<u>What plants need to grow</u> Air, light, water, nutrients from the soil, room to grow.	<u>Life cycle of flowering plants</u> Germination – the seed starts to grow. Growing – the plant grows bigger and forms a flower. Pollination – pollen from the anther lands on the stigma and travels down the style. Fertilisation – the pollen joins with an ovule and a seeds starts to form. Seed dispersal – the fully formed seeds are moved away from the parent plant.	<u>Water transportation</u> Roots absorb water from the soil. The stem transports water to the leaves.	<u>Seed dispersal</u> Seeds can be dispersed by: Wind – seeds are blown by the wind. Animals – seeds are eaten by animals and then excreted. Seeds also hook onto an animal's fur and are then transported. Explosion – dry seed pods split open and shoot out the seeds. Water – seeds fall into the water and move with the current

Disciplinary Knowledge					
Methods: <u>Identifying</u> Identifying means that you find out what something is. You can identify the main parts of a flowering plant. To do this you need to observe them closely. <u>Research using secondary sources</u> Research is an investigation or study to find out facts in order to reach a conclusion. Secondary sources are works such as textbooks, encyclopedia and scientific books. Secondary sources can help you to identify parts of a flowering plant. Data analysis: A scientific diagram is a picture that is usually labelled.	Methods: <u>Identifying</u> Identifying means that you find out what something is. You can identify the main parts of a flowering plant. To do this you can dissect them and then observe each part closely. Apparatus & techniques: Tweezers can be used to dissect an object. They help you to pick up very small parts.	Methods: <u>Fair testing</u> A fair test is when one variable is changed and the others remain constant. A variable is a factor that can change. You can set up a fair test to investigate how plants grow when one of the variables is removed. <u>Observation over time</u> Observing over time is when you watch or measure something over a period of time to see how it changes. You can observe how a plant grows over time, recording your observations at set time intervals. Apparatus & techniques: You can take photographs on an iPad to record changes over time Data analysis: When you collect data it needs to be presented in	Methods: <u>Observation over time</u> Observing over time is when you watch or measure something over a period of time to see how it changes. You can observe the changes to a sunflower seed after it has been planted. <u>Research using secondary sources</u> Research is an investigation or study to find out facts in order to reach a conclusion. Secondary sources are works such as textbooks, encyclopedia and scientific books. Secondary sources of information can be used to find out about germination, growing, pollination, fertilization and seed dispersal in a flowering plant. Apparatus & techniques: You can access secondary sources of information on an iPad.	Methods: <u>Observation over time</u> Observing over time is when you watch or measure something over a period of time to see how it changes. Evidence to develop explanations: You can carry out an observation over time to see how water is transported from the soil, to the stem, to the leaves of a plant. Know that findings from enquires can be reported in different ways e.g. orally, written, results presentation or as a conclusion. Know that a scientific write up can include: a question, prediction, method, results and conclusion.	Data analysis: Model making is a clear way to represent scientific ideas.

		a way that is clear and easy to understand. You can record observations in a table. Photographs can be used as a method of recording changes over time. These need to be in time order to show the changes. Evidence to develop explanations: Know that results from a scientific enquiry can be used to answer a scientific question. To answer a scientific question, you should include evidence from your scientific enquiry. Conclude that in order to grow and be healthy, plants need: air, light, water, nutrients from soil and room to grow.	Evidence to develop explanations: Know that findings from enquires can be reported in different ways e.g. orally, written, results presentation or as a conclusion. A powerpoint is a clear way to present information collected when using secondary sources.		
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