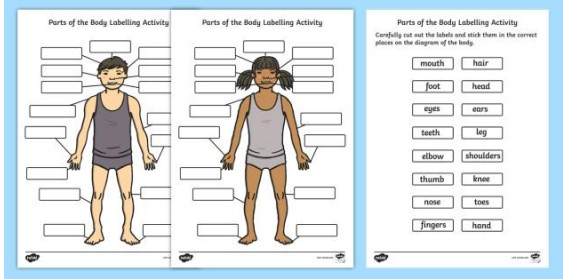
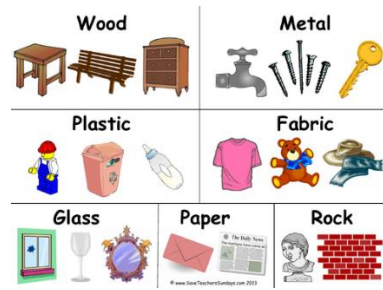





Year 1 Autumn 1 Science

Theme: Animals including humans	Cross Curricular Links: PE and PSHE	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> Parts of the body Head, Torso, Arm, Hand, Leg, Foot, Torso, Fingers, Toes, Knee, elbow Parts of the head Hair, Eyes, Ears, Nose, Mouth, cheeks 	I know that my senses are touch, sight, smell, hearing and taste.	Describe and record the changes to humans and animals over time as they grow.
Key assessment questions		
<p>Can you point at your knee? (leg, hand, hose etc) What job do your ears do? (mouth, eyes, fingers etc)</p>		
Knowledge to be taught	Useful pictures / diagrams / weblinks	
<ul style="list-style-type: none"> Identify and label the basic parts of the human body. Parts if the head and face. Limbs and extremities. 	<p>Body Parts - KS1 Teaching Resources (tes.com) What are the parts of the human body? - BBC Bitesize The human body - BBC Teach</p> 	
Definitions / technical vocabulary for teachers.		
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Medium term plan – 1 – Autumn 1 – Science – Animals including Humans (focusing on Humans)						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	We all have our own bodies and they share similarities. We are a type of animals called humans.	We experience and perceive the world through our senses (links to previous EYFS learning)	What are our 5 senses? What are the parts of the body we use to sense the world?	Know what and where on our bodies our hands and fingers are.	Know that we are humans and that humans are a type of animal. Know the parts of the human body and head.	
Key learning focus for the lesson (s)	Parts of the body Do the children know the names of any of their body parts? Learners label a diagram of the human body.	Parts of the Head How do we see, hear taste? Link sense to parts of the head. Learners able to identify the parts of the head	Our senses What do each of our 5 senses do? Experiment with how far we can see or hear.	Hands and fingers What can we do with our hands and fingers? What makes them special? List all the different things humans can do with their hands.	How are Humans different to other animals? Compare images of humans with different animals, what is the same? What is different?	
Potential amendments for SEND	<ul style="list-style-type: none"> • Provide topical word banks and picture cards that the learner can point or refer to when explaining scientific processes. Begin each lesson with a review of the vocabulary learnt in the previous lesson. 				<ul style="list-style-type: none"> • Provide topical word banks and picture cards that the learner can point or refer to when explaining scientific processes. Begin each lesson with a review of the vocabulary learnt in the previous lesson. 	

Year 1 Autumn 2 Science - Materials		
Theme: Flaming UK history.	Cross Curricular Links: D&T Cities and buildings, history Great Fire of London	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> • Wood • Metal • Plastic • Glass • Rock 	I can tell you it's natural. I can tell you it's manmade.	Identify and compare a wider range of materials. Identify different properties including permeability
Key assessment questions		
Can you tell me about...? Can you tell be a property of...? What would be a good material for...? Why did the houses in London burn?		
Knowledge to be taught	Useful pictures / diagrams / weblinks	
<ul style="list-style-type: none"> • Know the difference between an object and what it is made from. • Be able to describe the properties of materials using the correct vocabulary. • Identify and sort objects based on the materials they are made from. • Test the properties if different materials, strength, permeability. 	Year 1: Everyday Materials STEM EVERYDAY MATERIALS KS1 SCIENCE VOCABULARY by Miss Ellis #everydaymaterials #sciencevocabulary - YouTube Everyday materials - KS1 Science - BBC Bitesize	
Definitions / technical vocabulary for teachers.		

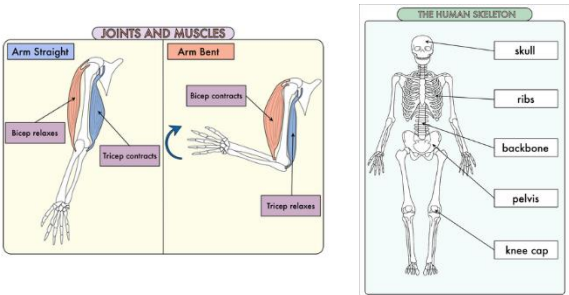
Medium term plan – Year 1– Autumn 2 – Science - Materials						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	Know the difference between an object and what it is made out of.	Be able to name common household materials.	Know and understand vocabulary related to the properties of materials.	Know how to measure mass	Know how to measure volume	Know the properties of common household materials.
Key learning focus for the lesson (s)	Identifying materials Examine familiar concrete objects. Identify the object and the material it if made from.	Knowing what object are made from. Examine objects in the learning environment, identify the material or materials it is made from.	Describing materials Handle example materials. Practice using vocabulary to orally describing them before recording.	Testing materials Which materials are strongest? Test the strength of materials using maths masses.	Testing materials 2 With materials are waterproof? Test the permeability of materials using measuring jugs.	Sorting materials. Using a selection of materials samples that they are familiar with. Learners sort them into group, link to investigations.
Potential amendments for SEND	Provide word banks that are accessible throughout the science topic. Encourage learners to tick the words they feel confident with to help target language that still needs support,	Provide word banks that are accessible throughout the science topic. Encourage learners to tick the words they feel confident with to help target language that still needs support,	Provide word banks that are accessible throughout the science topic. Encourage learners to tick the words they feel confident with to help target language that still needs support,	Employ manipulatives and resources used in maths lessons to support learning in science. • Bring abstract concepts to life through concrete resources and comparisons.	Employ manipulatives and resources used in maths lessons to support learning in science. • Bring abstract concepts to life through concrete resources and comparisons.	Provide topical word banks and picture cards that the learner can point or refer to when explaining scientific processes.

Year 2 Autumn 1 Science –		
Theme: Living things and their habitats (woodland)	Cross Curricular Links: Wider learning theme, habitats in woodland.	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> • Predator • Prey • Living • Habitat • adaption 	<ul style="list-style-type: none"> • Be able to identify different animals including, fish, reptiles, birds and mammals. 	<p>Know how changing environments and climate can affect living things.</p> <p>Explore living things in the local environment and sort based on their properties.</p>
Key assessment questions		
<p>Can you tell me if _____ is alive, dead or has never been alive?</p> <p>Can you draw a simple food chain?</p> <p>Tell me about the habitat of _____.</p>		
Knowledge to be taught	Useful pictures / diagrams / weblinks	
<ul style="list-style-type: none"> • Know the difference between things that are living, dead and never alive. • Identify and name a number of plants and animals in their habitats, including amphibians and marsupials. • Identify how animals and plants are adapted to their habitats. • Create a simple food chain. • Describe how living things are adapted to their habitats • Record and label habitats in the local environment 	<p>Year 2: Living things and their habitats STEM Living things and their habitats - KS1 Science - BBC Bitesize</p>   	
Definitions / technical vocabulary for teachers.		
<p>Habitat – The usual place in which a living thing can be found and which it is adapted to.</p> <p>Adaption – The features of a living thing that make it suitable for and successful in its habitat.</p>		

Medium term plan – Year 2 – Autumn 1 – Science – Living things and their habitats.						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	Know the features of living things. Be able to identify common animals, plants and materials.	Be able to identify common plants and animals in our environment.	Know some of the different climates that can be found around the world.	Know the different parts of an animal's body.	Know that different animals consume different things, know the vocabulary carnivore, herbivore and omnivore.	
Key learning focus for the lesson (s)	Explain that living things carry out life process (e.g. respiration, excretion etc). Dead things were once living (plants and animals) but are no longer alive (e.g. wooden objects). Things that were never alive are made of materials such as plastic/metal/glass etc that do not come from plants or animals. Learners sort on a table.	Habitats in our local environment. What is a habitat? How many can you name? What types of plants and animals live there? Learners explore the local environment and record the habits they have found in images and diagrams with labels.	Habitats around the world. Not all living things can be found on our field, some live around the world. Look at contrasting climate for habitats, desert for camels and tundra for polar bears. How are these habits different to each other and to our local environment? Links to geography learning on climates.	How are living things adapted to their environment? Discuss the living things that we found on our local walk. How are they suited to their habitat? Introduce the idea of adaption. Identify how a small selection of familiar living things are adapted to their habitat.	What different animals eat in their habitats. Explore how different animals in the same habitat are dependent on each other, particularly for food. What would happen if one living thing disappeared? Learners examine a familiar habitat. How are the living things dependent on each other?	Food chains. Identify different food sources. Role play food chains. Relate this to earlier learning on living things diet and interdependency. Learners to create their own simple food chain for a familiar habitat.
Potential amendments for SEND	Provide pre-teaching opportunities for learners to hear vocabulary prior to the lesson, to support their access and engagement in whole-class teaching. Refer to language regularly during lessons and, where applicable, throughout the school day, as this will embed the vocabulary and build stronger links and associations.					Bring abstract concepts to life through concrete resources and comparisons.

Year 2 Autumn 2 Science – Use of everyday materials		
Theme: Use of everyday materials	Cross Curricular Links: History – the gunpowder plot	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> • Squash • Twist • Cut • Permeable • Impermeable • Transparent • Opaque 	<ul style="list-style-type: none"> • Know the difference between an object and what it is made from. • Be able to describe the properties of materials using the correct vocabulary. • Test the properties of different materials, strength, permeability. 	Working scientifically: <ul style="list-style-type: none"> • Ask relevant questions and plan simple investigations to find the answer. • Set up and carry out simple investigations.
Key assessment questions		
Can you tell me about the properties of this material? What material would be good for.....? Why has this material been chosen?		
Knowledge to be taught	Useful pictures / diagrams / weblinks	
<ul style="list-style-type: none"> • Know and describe a wider range of materials properties. Permeable, impermeable, transparent, opaque, flexible rigid. • Identify and compare a wider range of materials. • Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam. • Investigate ways of changing the shape of solid materials, cut, twist and squash. • Test the suitability of different materials for a purpose. • Describe using correct vocabulary why a material is or is not suitable for a purpose. 	Year 2: Uses of Everyday Materials STEM Uses of everyday materials - Year 2 Science - BBC Bitesize	
Definitions / technical vocabulary for teachers.		
Permeable – A material that liquids can pass through. Impermeable – A material that will not let liquids pass through it (waterproof) Transparent – A material that you can see through clearly, allows light to pass through it. Opaque – A material that you cannot see through at all. Does not allow light to pass through it.		

Medium term plan – Year 2 – Autumn 2 – Use of everyday materials.						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	Know the difference between an object and what it is made out of. Be able to name common materials.	Be able to describe the properties of a material. Use the correct vocabulary to describe a material.			Use correct vocabulary to describe the properties of a material. Know the properties of some common materials.	Know that not all materials are natural, several are discovered or invented.
Key learning focus for the lesson (s)	What materials are used around us? Why do we think they have been used? Explore the class room what <u>materials</u> can we find? Why have these materials been chosen? Record with pictures or as a list. Link the material to it's purpose, explain why that material has been used.	Testing materials. Squash and twist. Model what we mean by squash and twist. Decide as a class how we will test this. Using a range of everyday materials test if they can be squashed or twisted. Do not bring in a measure this time a simple yes or no. Record results in a table.	Testing materials. Transparent or opaque. Explain the new vocabulary and use throughout. Using the same materials as in the previous session test if learners can see light through it using a torch. Make two groups based on findings. MA group may measure the amount of light using a logbox. Record results in a table.	Testing materials. Permeable or impermeable. Explain the new vocabulary and use throughout. Using the same materials as in the previous session test if learners can see light through it using a torch. Make two groups based on findings. Record results in a table. AM could measure the amount of water that is let through and add a diagram to their recording.	Suitability of materials. What would be the best material to make an umbrella? What would be an unsuitable material? What about a shoe? Discuss the suitability of different materials. Learners subject suitable materials for different purposes and explain their choices based on their observations and knowledge from previous sessions.	Find out about a famous inventor, this could be through guided research. John Macadam or Dunlop. Linked to topic this could be Alfred Nobel. Use information to write a mini biography. Focusing on why their discovery was / is important.
Potential amendments for SEND	Provide topical word banks and picture cards to point or refer to.	Scaffold learning to make it accessible for all, e.g., when creating data tables for an experiment, learners with numeracy difficulties could create a pictogram. Employ manipulatives and resources used in maths lessons to support learning in science. Bring abstract concepts to life through concrete resources and comparisons.			Provide topical word banks and picture cards to point or refer to.	

Year 3 Autumn 1 Science,		
Theme: Animals including humans	Cross Curricular Links: Local study, what living things are in our community.	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> • Vertebrate • Invertebrate • Exoskeleton • Muscle • Joint • Contract • Expand. 	<ul style="list-style-type: none"> • Know how animals and humans develop and change over time. • Know the basic needs of humans and animals to live and be healthy. • Know the importance of hygiene, healthy diet and exercise to stay healthy. 	<p>Name and know the function of different types of teeth.</p> <p>Compare the teeth of humans and other animals and relate to what they eat.</p>
Key assessment questions		
<p>Can you sort these living things based on their skeleton? Which foods should we eat a lot of and which should we eat less of? What food does _____ need? Why does it need different foods? Can you name this bone from the human skeleton? Can you explain how a muscle works?</p>		
Knowledge to be taught	Useful pictures / diagrams / weblinks	
<ul style="list-style-type: none"> • Name and know the purpose of the main bones in the human body. • Understand and explain the function of muscles. • Know the components of a healthy diet. • Label the bones of the human body and explain their function. • Compare and skeletons of humans and other mammals. • Use knowledge of a healthy diet to design a healthy balanced meal. 	<p>Year 3: Animals, including humans STEM Animals including humans - Year 3 Science - BBC Bitesize</p>  <p>The image contains two diagrams. The left diagram, titled 'JOINTS AND MUSCLES', shows two states of an arm: 'Arm Straight' and 'Arm Bent'. In the 'Arm Straight' state, the bicep is relaxed and the tricep is contracted. In the 'Arm Bent' state, the bicep is contracted and the tricep is relaxed. The right diagram, titled 'THE HUMAN SKELETON', shows a full human skeleton with labels for the skull, ribs, backbone, pelvis, and knee cap.</p>	
Definitions / technical vocabulary for teachers.		
<p>Vertebrate – An animal with an internal backbone or spine. Invertebrate – An animal without an internal backbone or spine. Exoskeleton – A hard shell or carapace on the outside of an animal.</p>		



Medium term plan – Year 3 – Autumn 1 – Science, animals including humans.						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	Know the healthy plate model, links to Year 2 learning	Know the basic food groups and have an idea of how much of each should be in our diets.	Know the difference between a food and what it is made of	Know that humans and other animals have a skeleton. Be able to name and describe the feature of common animals.	Know the name of parts of the human body. Be aware of the purpose of a skeleton.	Know the name of parts of the human body. Be aware of the purpose of a skeleton. Be able to make scientific observations. Know the effects of exercise on the body.
Key learning focus for the lesson (s)	<p>What is diet? What is nutrition? Discuss. Discuss what foods we have eaten over the last couple of days. Create a class list. What types of food do animals eat? Look at examples in the wild and compare to domesticated animals.</p> <p>Do all humans and animals eat the same food? Revisit the healthy plate model and add the pyramid model.</p> <p>Learners add the foods they have eaten over the preceding couple of days to the pyramid.</p>	<p>Why do we need to have a healthy diet? Discuss. Relate to learning from previous week. Ensure all learners are secure with the vocabulary.</p> <p>Using the food pyramid or balance plate as a template learners plan day of balanced meals, identifying the different food types in each meal.</p>	<p>Why are some food bad for us? Like fast foods or sweets? Model making a microwave cake, explain that it is made out of the different ingredients and we need to think about all of the things that are in our food.</p> <p>Focus on the sugar, fat and carbs in different foods. Examine food labels. Which have more sugar or fat in them? Is this always bad? Learners sort food labels into those which are high fat or sugar and those that are not.</p>	<p>What would happen if we didn't have any bones? Show the learners examples of skeletons from different living things, observe and compare.</p> <p>Introduce the vocabulary vertebrate, invertebrate and exoskeleton. As a class use this new vocab to classify some of the example. Ensure they have a clear understanding of the new vocabulary.</p> <p>Sort the example animals into three groups based on their skeletal structure.</p>	<p>The human skeleton.</p> <p>As a class examine the model skeleton(s). We all have one of these inside us. Can the learners remember the job that a skeleton does? Learn the names of key bones in the human body. Skull, spine, ribcage, pelvis, radius and ulna, femur, tibia and fibula.</p> <p>Learners label their own skeleton using the correct vocabulary. Cut and stick to support,</p>	<p>What are muscles? What job do they do? Explain that our skeleton is moved around by our muscle and without them we would not be able to move. Lift water bottles by curling the arm and observe the bicep and triceps, introduce and repeat these vocab words. Use lollypop stick and elastic bands to create a model muscle, observe that when one muscle contracts the other expands. Complete a simplified diagram and label with a short explanation.</p>

Potential amendments for SEND

Ask teaching assistants to collate word/picture banks on a mini whiteboard/paper with the learner during the teaching input to support their independent learning activity.

Provide topical word banks and picture cards that the learner can point or refer to when explaining scientific processes.
Ask teaching assistants to collate word/picture banks on a mini whiteboard/paper with the learner during the teaching input to support their independent learning activity.

Year 3 Autumn 2 Science,

Year 3 Autumn 2 Science,		
Theme: light	Cross Curricular Links:	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> • Source • Reflect • Shadow • Spectrum • lux 	<p>I know that my senses are touch, see, smell, hear, taste. I can use my senses to explore the natural world.</p>	<p>Working scientifically. Present finding in tables, graphs and diagrams. Explain finding both orally and in writing including diagrams.</p>
Key assessment questions		
<p>What is the cause of some places being dark? What happens when light hits a surface? What happens to its shadow when you move an object closer to a source of light?</p>		
Knowledge to be taught		Useful pictures / diagrams / weblinks
<ul style="list-style-type: none"> • Know that we need light to see and that dark is the absence of light. • Know that light from the sun can be dangerous. • Know that shadows are formed when light is blocked by an opaque object • Investigate the angle of incident and angle of reflection. • Investigate the size of a shadow as an object is moved closer to or further from a light source. • Measure light using a light metre. 		<p>Year 3: Light STEM Light - Year 3 Science - BBC Bitesize</p> 
Definitions / technical vocabulary for teachers.		
<p>Source – Where light originates from. Sun. Torch etc. Reflect – When light rays bounce off of a surface. Spectrum – The different wavelengths of light, visible to us as colours that make up white light. Lux – The unit used to measure the amount of light.</p>		 <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 25%;"> <p>LARGE SHADOW when the toy is close to the light</p> </div> <div style="border: 1px solid black; padding: 5px; width: 25%;"> <p>SMALLER SHADOW when the toy is further from the light</p> </div> <div style="border: 1px solid black; padding: 5px; width: 25%;"> <p>TINY SHADOW when the toy is a long way from the light</p> </div> </div>

Medium term plan – Year 3 – Autumn 2 – Science, light						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	Have previously observed that light levels vary. Know that we can measure things to compare them.	Be able to make scientific observations by following instructions for an investigation.	Know that reflection of when light bounces of a surface. Have some knowledge form maths of angles.	Know that dark is an absence of light and that light travels from its source.	Know that dark is an absence of light and that light travels from its source. Know that shadows are formed when an object blocks light.	Recognise seasonal changes and be aware that at some time of the year and in places we might visit there is more sunlight.
Key learning focus for the lesson (s)	Light and dark. Place a note into a box and poke a small hole in it to look through. Can we read the note? Why can't we. Open the box and look through the hole again. Can we read the note now? What has changed? Discuss the difference between light and dark. Ensure learners understand that dark is an absence of light. Using logboxes the learners investigate light levels in different areas of the classroom and record in a table. What was the lightest	Investigating reflection 1. Use one of the large lights to shine a light on a book. Why doesn't the light pass through the book? What is happening to the light? Why can we see it as a big circle on the surface of the book? Explain the meaning of the word reflect. Ensure learners have a clear understanding that it is when	Investigating reflection 2. Revisit the learning from last session. What does it mean when light is reflected? Using the large scale lights, reflect light off of a large mirror and demonstrate sending it to different parts of the room. Learner experiment using torches and mirrors. What happens when you	Shadows 1. Revisit dark as an absence of light. So outside if a clear day and look for your shadows. What happens to our shadows when we move? What is we stick our arms out? Where is the source of light? Make simple shadow puppets. Observe that shadows form when an object blocks a light and that they take the shape of the blocking object. When the shape of the object	Shadows 2. What did we learn in the previous session? Ensure that learners are clear on how shadows are formed and why they take the shape they do. Using the shadow puppets built in the previous session learners have an initial experiment with moving them closer and further from the	Sun safety. Show the learners images of a cold and snowy day and a hot and sunny day. How would they dress for each? Why? What is different? What would happen to us if we got to cold? What are the dangers when we are exposed to too much sunlight? What steps can we take to

	<p>place they found and what was the darkest?</p>	<p>light rays bounce off of a surface. Investigate reflective surfaces in the classroom by passing a torch through a piece of white paper and using it to check for reflections. Sort surfaces on a simple table and record method as a labelled diagram.</p>	<p>change the angle of the torch? Learners draw their own diagram showing the path of light as it reflects off of the mirror.</p>	<p>changes so does the shape of the shadow.</p>	<p>source of light. Make a prediction. Measuring both the distance from the source of light and the size of the shadow investigate and record in a simple table. Where we correct with our prediction? Record the method as a simple diagram with labels.</p>	<p>protect ourselves? Learners produce a Sun safety poster giving clear points such as wearing a hat, shades and sun cream. Keep good examples and display in the cloakroom in Spring and Summer.</p>
<p>Potential amendments for SEND</p>	<p>Scaffold learning to make it accessible for all, e.g., when creating data tables for an experiment, learners with numeracy difficulties could create a pictogram.</p> <p>Bring abstract concepts to life through concrete resources and comparisons.</p>					<p>Bring abstract concepts to life through concrete resources and comparisons.</p>

Year 4 Autumn 1 Science –

Theme: States of matter	Cross Curricular Links:	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> Solid Liquid Gas Boil Melt Freeze Evaporation condensation 	<ul style="list-style-type: none"> Know and describe a wider range of materials properties. Permeable, impermeable, transparent, opaque, flexible rigid. Describe using correct vocabulary why a material is or is not suitable for a purpose. 	<ul style="list-style-type: none"> Use knowledge of solids, liquids and gasses to devise ways of separating materials. Know that some changes of materials are reversible and some are irreversible. Groups and classify materials on their scientific properties. Test materials for desired properties

Key assessment questions

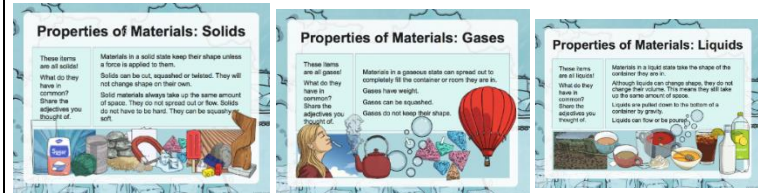
- At what temperature does water boil?
- At water temperature does water freeze?
- What happens when a liquid evaporates?
- What happens when a liquid freezes?
- What happens when a solid melts?
- What happens when a gas condenses?

Knowledge to be taught

- Know the properties of solids, liquids and gases.
- Know the boiling point and melting point of water.
- Understand the processes of evaporation and condensation and relate to the water cycle.
- Sort materials into groups of solids, liquids and gasses.
- Investigate the melting point of different materials.
- Investigate the processes of evaporation and condensation and know the role played by heat.

Useful pictures / diagrams / weblinks

[States of matter - Year 4 Science - BBC Bitesize](#)
[Year 4: States of Matter | STEM](#)



Definitions / technical vocabulary for teachers.

Freezing – The process of turning from a liquid into a solid.
 Evaporation – the process of turning from a liquid to a gas, often observed with water.
 Where do the puddles go after it has rained?
 Condensation – The process of turning from a gas back into a liquid. Can be observed on the inside of windows or what Clingfilm is placed over hot water.



Medium term plan – Year 1 – Autumn 1 – Science – States of matter						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre-requisite knowledge required before the lesson.		Know the properties of solids, liquids and gases. Make scientific observations.	Know the properties of solids, liquids and gases. Know that melting is when a solid turns in to a liquid.	Know the properties of solids, liquids and gases. Know that melting is when a solid turns in to a liquid.	Know the properties of solids, liquids and gases. Know that melting is when a solid turns in to a liquid. Know that evaporation is when a liquid turns into a gas.	Know the properties of solids, liquids and gases. Know that melting is when a solid turns in to a liquid. Know that evaporation is when a liquid turns into a gas.
Key learning focus for the lesson (s)	Sort materials into groups of solids, liquids and gasses. Use practical investigation to identify the features of materials, including some which could be in more than one category. Does it flow? Can you squash it? Can you pick it up? Once identified sort and photograph for recording.	Investigate the melting point of different materials. Explain that we are going to put ice cubes into different temperature water. Learners make and record a prediction. Drop coloured (so they can be seen easily) ice cubes into bowls of different temperature water. Measuring the temperature carefully with log box probes, time how long it takes for each ice cube to melt. Record results in a table and method as a diagram.	Investigate the melting point of different materials. Investigate the melting points of chocolate, margarine and jelly cubes. Measuring amount of the materials and temperature carefully. Reinforce that we only change one variable and that is temperature in this place. Record results as a table and method as a diagram.	Investigate the processes of evaporation and condensation and know the role played by heat. Write name on the table with water. Observe the water disappearing. Place wet paper towels in different locations, inc next to the radiator and outside. Make predictions, which will evaporate first? Check every 5 minutes. Boil a kettle in front of a mirror and observe the water condensing on the surface.	Revisit the processes of melting, freezing and evaporation. Where do other gases come from? Investigate the production of gases by adding bicarbonate of soda to vinegar. At each stage use the properties of matter to identify their state. Collect the gas produced in a balloon. Go through the expectations for writing up an experiment. Learners record their results fully including	Investigate the processes of evaporation and condensation and know the role played by heat. Understand the processes of evaporation and condensation and relate to the water cycle. Complete diagrams of the water cycle using template as necessary, link to a repeatedly use key vocabulary. Ensure correct vocabulary is used throughout. Create large scale diagrams of the water cycle to be display on the working wall.

		Was our prediction correct? Add a conclusion based on what they observed.		Children to repeat using bowls of warm water and cling film. Recording the temperature of the water throughout. Record observations as a diagram. Ensure that condensation is labelled.	a table, method, diagram and conclusion.	
Potential amendments for SEND	Provide key vocabulary, experience one materials at a time and use given vocab to describe.	Bring abstract concepts to life through concrete resources and comparisons. Provide topical word banks and picture cards that the learner can point or refer to when explaining scientific processes.				Act out the water cycle in small groups with support, add actions to aid understanding.

Year 4 Autumn 2 Science -

Theme: Electricity	Cross Curricular Links:	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> • Switch • Circuit • Conductor • Insulator • Lamp • Cell / battery 	<ul style="list-style-type: none"> • Recognise devices and uses of electricity in everyday life. • Have an understanding of the concept of electricity as 'power' 	<p>Represent circuits in accurate circuit diagrams.</p> <p>Make changes to a circuit and use scientific knowledge to explain changes in the behaviour of components.</p>

Key assessment questions

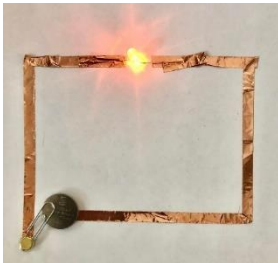
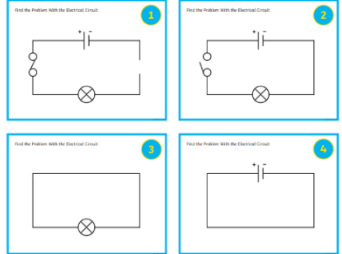
Is the circuit complete?
 What will happen if we add more cells?
 Why doesn't the lamp light up? / Why is the circuit incomplete?
 Which materials conduct electricity?
 Why is there plastic or rubber around the outside of a wire?

Knowledge to be taught

- Know and identify devices which use electricity.
- Name and know the function of components.
- Know the symbols used for circuit diagrams.
- Know that conductors are materials which allow electricity to flow and insulators prevent the flow of electricity.
- Predict if a lamp will light based on a circuit diagram.
- Build simple circuits.
- Investigate the effect of adding more cells to a circuit

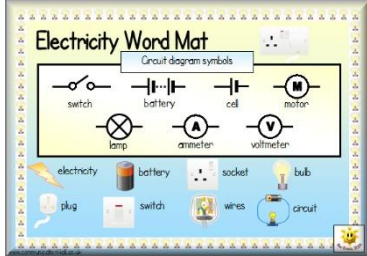
Useful pictures / diagrams / weblinks

[Year 4: Electricity | STEM](#)
[Electricity - Year 4 Science - BBC Bitesize](#)

Definitions / technical vocabulary for teachers.

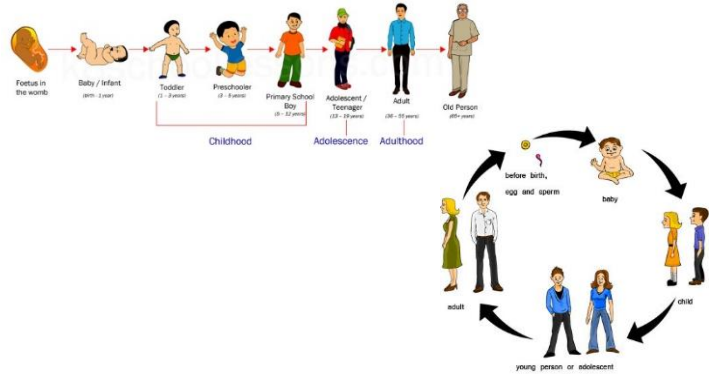
Electrical conductor, a material that allows electricity to flow through it.
 Electrical insulator, a material that does not allow electricity to flow through it.
 Cell, a single component that generates electricity.
 Battery, more than one cell.
 Lamp, correct scientific term for what could be called a light bulb.
 L.E.D, light emitting diode, an electrical component that produces light without heat.



Medium term plan – Year 1 – Autumn 2 – Science - Electricity						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre-requisite knowledge required before the lesson.	Know that some devices in our lives use electricity. Recognise and name common household items.	Know that a battery or cell can be a source of electricity.	Recognise the symbols used in circuit diagrams and be able to draw a simple circuit diagram.	Understand the vocabulary conductor and insulator. Be able to follow instruction to carry out an investigation.	Use a circuit diagram to build a simple circuit. Be able to follow instruction to carry out an investigation.	Use a circuit diagram to build a simple circuit. Recognise the symbols used in circuit diagrams. Understand that a circuit must be complete in order for electricity to flow around it.
Key learning focus for the lesson (s)	<p>Know and identify devices which use electricity.</p> <p>What would life be like without electricity? Imagine and write a list of things they would not be able to do.</p> <p>Class discussion: What do we have in our houses and school that use electricity? Walk around school if needed to aid thinking. Make a list of ten things that we use electricity for on a daily basis.</p>	<p>Name and know the function of components.</p> <p>Know the symbols used for circuit diagrams.</p> <p>Use mats with basic circuit diagrams to build simple circuits, check that they work and problem solve if they do not. Match the components used to the symbols on the diagram.</p> <p>Photograph and draw their own accurate diagram into books.</p>	<p>Name and know the function of components.</p> <p>Know the symbols used for circuit diagrams.</p> <p>Investigate the effect of adding more cells to a circuit</p> <p>Investigate what happens to a circuit if additional bulbs or batteries are added.</p> <p>Describe their observations using correct scientific vocabulary.</p> <p>MA to investigate the effects of adding two bulbs to series or parallel circuits.</p> <p>Record with diagrams and a short explanation using</p>	<p>Know that conductors are materials which allow electricity to flow and insulators prevent the flow of electricity.</p> <p>Sort materials by our predictions of whether they will or will not allow electricity to pass through them.</p> <p>Test predictions by connecting to a simple circuit containing an LED.</p> <p>Watch the short film of various vegetables being collected to the mains.</p>	<p>Name and know the function of components.</p> <p>Know the symbols used for circuit diagrams.</p> <p>Predict if a lamp will light based on a circuit diagram.</p> <p>Build simple circuits.</p> <p>Build switches in different ways and link to learning on conduction.</p> <p>Create a pin and paper clip switch and a tinfoil card switch.</p> <p>How could these switches be used in everyday life? Which types of switches do we use?</p> <p>Record with an explanatory diagram</p>	<p>Name and know the function of components.</p> <p>Know the symbols used for circuit diagrams.</p> <p>Predict if a lamp will light based on a circuit diagram. Build simple circuits.</p> <p>Predict and test given circuits, which do or do not complete or may contain open switches.</p> <p>Use knowledge gained so far to construct a circuit that will light up a dojo monster's eyes when the circuit is complete.</p> <p>Create using card parts and copper tape to have a product which can be taken home.</p>

			skills practiced in English learning.		and captions, ensure refers to conductor and insulators.	
Potential amendments for SEND	<p>Use pictorial clues and sort, which devices use electricity which do not?</p> <p>Provide topical word banks and picture cards that the learner can point or refer to when explaining scientific processes.</p>	Scaffold learning to make it accessible for all, e.g., when creating data tables for an experiment, learners with numeracy difficulties could create a pictogram.				





Year 5 Autumn 1 Science,

Theme: Living things and their habitats		Cross Curricular Links: Urban fauna and flora. What living things make their homes in cities? Online safety when conducting research.	
Key vocabulary		Prior learning	Next steps
<ul style="list-style-type: none"> Life cycle Reproduction Sexual Asexual Fertilise Egg sperm 		<ul style="list-style-type: none"> Group living things in different ways based on their features. Be able to identify different animals including, fish, amphibians, reptiles, birds and mammals. 	<ul style="list-style-type: none"> Know how living things can be classified into broad groups based on similarities and differences. Explain classifications based on characteristics using correct scientific vocabulary. Know how animals and plants are adapted to their environment
Key assessment questions			
<p>Can you tell me the difference between sexual and asexual reproduction?</p> <p>Can you describe the stages of sexual reproduction?</p> <p>Can you explain the life cycle of a mammal, insect or bird?</p> <p>Can you explain how a plants features are adapted for pollination?</p>			
Knowledge to be taught		Useful pictures / diagrams / weblinks	
<ul style="list-style-type: none"> Know and describe the differences in the life cycles of animals and plants. Know the names and functions of reproductive organs Know and explain the processes of reproduction in living things. David Attenborough and Jane Goodall. Record the life cycles of different living things in diagrams and written explanations. 		<p>Year 5: Living things and their habitats STEM</p> <p>Living things and their habitats - Year 5 Science - BBC Bitesize</p> <p>https://youtu.be/-tvA3EzqjI8?si=POHi7PJxBZ4Y2J2I</p> <p>Taking cuttings - Propagating and growing plants - 4th level Science Revision - BBC Bitesize</p> 	
Definitions / technical vocabulary for teachers.			
<p>Sexual – Sexual reproduction is achieved through the fusion of male and female cells.</p> <p>Asexual – Asexual reproduction is achieved with the involvement of only one parent organism.</p>			

Medium term plan – Year 5 – Autumn 1 – Science, Living things and their habitats						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	Be aware of David Attenborough and why he is famous around the world. Have some familiarity with wildlife programmes.	Recognise and know the features of common insects and amphibians. Know how to construct a life cycle (form previous learning)	Know the key features of a plant and be aware of their basic functions. Be aware that reproduction is one of the properties of all living things MRS NERG / GREN	Know the key features of a plant and be aware of their basic functions. Be aware that reproduction is one of the properties of all living things MRS NERG / GREN	Recognise and know the features of common mammals. Know how to construct a life cycle (form previous learning)	Know how to construct a life cycle (form previous learning) BE aware of different biomes and habits around the world (previous learning)
Key learning focus for the lesson (s)	Scientists and Inventors: David Attenborough. Using a mix of videos and text sources research and make notes about the life and achievements of David Attenborough. Record as a shared mind map before completing a	Insect and amphibian lifecycles. Look at example of insect and amphibian young. How are they different to human young? Why do we think they are different? Examine and discuss life cycles of insects and amphibians. How are they the same? How are	Mammal and bird lifecycles Using previous knowledge of life cycles compare the life cycles of mammals (including humans) and birds. How are they the same? How are they different? Create two more comparative life cycles.	Sexual Reproduction in flowering plants. Why is it bad that bees are disappearing? (links to previous learning) Discuss and then act out the stages of pollination by a flying insect. Using this knowledge look closely at the sexual organs of a flowering plant. Do we know the role they all play? Learners label their own diagram of the sexual organs of a flowering plant.	Asexual reproduction in plants. Investigate ways that plants reproduce asexually. Growing new plants from a range of parent plant parts. Take cuttings from spider or strawberry plants and repot in the classroom to observe. Record the process as a diagram and short explanation of plant cloning.	Comparing life cycles around the world. Discuss all of the different life cycles both plant and animal that have been studied so far. Why are there all these different ways for plants and animals to reproduce? Discuss. How are these forms of reproduction adapted to the creature's habit? For each of Mammal, bird, insect and amphibian learners compose a short explanation of how their

	<p>mini biography possibly as part of English learning.</p>	<p>they different? Orally rehearse the stages. Learners produce their own side by side life cycles for these creatures.</p>	<p>Orally rehearse the stages to ensure understanding and sequencing. In groups compare and contrast the four completed life cycles.</p> <p>Extension. Compare mammals and birds to monotremes.</p>			<p>form of reproduction is adapted and suited to their habitat.</p>
<p>Potential amendments for SEND</p>	<p>Provide topical word banks and picture cards that the learner can point or refer to when explaining scientific processes.</p> <p>Scaffold learning to make it accessible for all, e.g., if writing up the method for their experiment, a learner with writing difficulties could verbally explain for you or a teaching assistant to scribe, note-take or film explaining their answers.</p>					

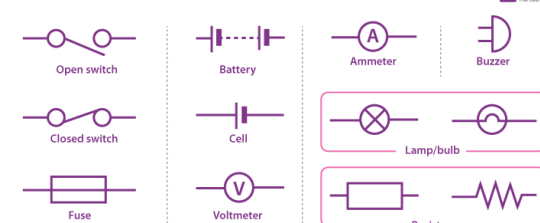
Year 5 Autumn 2 Science,

Theme: Properties and changes of materials		Cross Curricular Links: Materials developed by the Victorians e.g vulcanised rubber.	
Key vocabulary		Prior learning	Next steps
<ul style="list-style-type: none"> • Hardness • Solubility • Transparency • Conductivity • Dissolve • solution 		<ul style="list-style-type: none"> • Know and describe a wider range of materials properties. Permeable, impermeable, transparent, opaque, flexible rigid. • Identify and compare a wider range of materials. • Test the suitability of different materials for a purpose. 	<p>Working scientifically</p> <p>Use scientific evidence to prove or disprove a hypothesis</p> <p>Write explanations for observations including causal and relationship statements.</p>
Key assessment questions			
<p>Can you explain to me what a thermal / electrical conductor / insulator is?</p> <p>Can you explain to me what happens when a solid dissolves?</p> <p>Can you think of a way to separate this solid and liquid?</p> <p>Is this a reversible or irreversible change?</p>			
Knowledge to be taught		Useful pictures / diagrams / weblinks	
<p>Know that some materials will dissolve to form a solution.</p> <p>Use knowledge of solids, liquids and gasses to devise ways of separating materials.</p> <p>Know that some changes of materials are reversible and some are irreversible.</p> <p>Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton</p> <p>Groups and classify materials on their scientific properties.</p> <p>Investigate which materials dissolve to form a solution and which form a suspension.</p> <p>Investigate different ways of separating materials.</p> <p>Test materials for desired properties.</p>		<p>Year 5: Properties of materials STEM</p> <p>Properties and change of materials - Year 5 Science - BBC Bitesize</p> <div style="text-align: center;">  </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>SOLID</p>  <ul style="list-style-type: none"> ■ Rigid ■ Fixed Shape ■ Fixed Volume ■ Cannot be squashed </div> <div style="text-align: center;"> <p>LIQUID</p>  <ul style="list-style-type: none"> ■ Not Rigid ■ No Fixed Shape ■ Fixed Volume ■ Cannot be squashed </div> <div style="text-align: center;"> <p>GAS</p>  <ul style="list-style-type: none"> ■ Not Rigid ■ No Fixed Shape ■ No Fixed Volume ■ Can be squashed </div> </div>	
Definitions / technical vocabulary for teachers.			
<p>Dissolve – When a solid becomes part of a liquid and no longer exists separately.</p> <p>Solution – A liquid in to which a solid has dissolved.</p> <p>Suspension – A liquid in to which a solid is mixed however the solid still exists separate to the liquid.</p>			

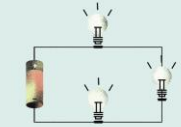
Medium term plan – Year 5 – Autumn 2 – Science, properties and changes of materials.						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	Know the properties of common materials and how we can test them.	Know the vocabulary insulator and conductor (from previous learning). Be able to use a logbox to measure temperature.	Know the vocabulary insulator and conductor (from previous learning). Know how to build a simple circuit.	Know the properties of common materials and how we can test them. Be able to carry out a fair test and control variables.	Understand the process of dissolving and of creating a solution. Know that water evaporates.	Know that materials can change state. Have observed that some materials dissolve and some form suspensions. Have a clear understanding of the water cycle.
Key learning focus for the lesson (s)	Revising properties of materials. Present learners with a selection of common everyday materials and tool with which to test. Pipettes, water, magnets, rods to scratch. Learners choose different ways to test and classify. Share and discuss.	Testing thermal insulators. Revisit the vocabulary insulator and conductor from previous learning ensure all learners have a clear understanding before investigating. Share a selection of pliable materials. Predict which do we think will be good thermal insulators? Place an equal amount	Electrical conductors and insulators. Revisit the vocabulary insulator and conductor. Show the learners a circuit diagram of a simple circuit with cell lamp and 3 crocodile clip, Have children build this independently in pairs. Explain that we are going to use this to test the	Dissolving. When we put sugar in our tea where does it go? We can still taste it. Explain that the sugar dissolves (if learners did not offer it). Ensure that learners understand that in order to have dissolved the solid needs to have disappeared and become part of the liquid. If the solid is still present you have a suspension. Mix a variety of powdered solids into warm water. Record which dissolve and which do not.	Separating. Discuss the materials that we tested in the previous session. Which dissolved and made a solution. Which made a suspension? Discuss and demonstrate how we could remove sand from water using a sieve. Use filter paper and a funnel to remove flour from water. How could we remove salt that have dissolved into water? Dissolve a large amount of salt into cups of water and set up on a windowsill so that the water will	Reversible and irreversible. Revisit the different changes of state that have been studied. Focus on the water cycle. When water freeze and become a solid is that change reversible? What about when it evaporates? Could we reverse the salt dissolving? Present the learners with a selection of familiar changes of materials. Sort in to those that are reversible and those that are not.

	Learners record their classification as a Venn diagram.	of warm water in plastic cups, place a thermometer probe in each. Wrap fully in the materials to be tested. Take reading at 5 min intervals and record on a table. Learners also create a labelled diagram and write a conclusion when finished.	electrical conductivity of our materials. Predict which materials will conduct electricity and record. Test and record on a simple table. Add a circuit diagram and written method.	Write a short explanation of the process of dissolving.	evaporate over the following days leaving the salt crystals behind.	
Potential amendments for SEND	Provide topical word banks and picture cards that the learner can point or refer to when explaining scientific processes. Bring abstract concepts to life through concrete resources and comparisons.	Scaffold learning to make it accessible for all, e.g., if writing up the method for their experiment, a learner with writing difficulties could verbally explain for you or a teaching assistant to scribe, note-take or film explaining their answers. Bring abstract concepts to life through concrete resources and comparisons. Scaffold learning to make it accessible for all, e.g., if writing up the method for their experiment, a learner with writing difficulties could verbally explain for you or a teaching assistant to scribe, note-take or film explaining their answers.				Provide topical word banks and picture cards that the learner can point or refer to when explaining scientific processes. Bring abstract concepts to life through concrete resources and comparisons.

Year 6 Autumn 1 Science,

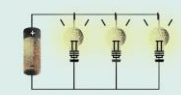
Theme: Electricity	Cross Curricular Links: What was the impact of electricity during the 1940's? How was electricity used during the war? What did people use instead of electricity?	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> Parallel Serial Voltage Amp 	<ul style="list-style-type: none"> Name and know the function of components. Know the symbols used for circuit diagrams. 	<p>Investigate current in a series circuit. Investigate current in a parallel circuit. Investigate resistance in a circuit.</p>
Key assessment questions		
<p>Can you draw a circuit diagram for this circuit using the correct symbols? Can you explain what will happen when we increase the voltage in a circuit? Can you explain the difference between a parallel and series circuit?</p>		
Knowledge to be taught		Useful pictures / diagrams / weblinks
<ul style="list-style-type: none"> Know the difference between a serial and parallel circuit. Know what voltage and amperage are and how they affect components. Represent circuits in accurate circuit diagrams. Investigate the effects of increasing the voltage within a circuit. Build parallel and serial circuits and measure the effect. Make changes to a circuit and use scientific knowledge to explain changes in the behaviour of components. 		<p>Year 6: Electricity STEM Electricity - Year 6 Science - BBC Bitesize</p>  <p>BYJU'S The Learning App</p>
Definitions / technical vocabulary for teachers.		
<p>Series circuit – A circuit where each component are in a single line or sequence. Parallel circuit – A circuit where components are on separate paths so that the failure of one does not affect the others. Voltage – The force from a source of electrical current that ‘pushes’ the electrons around a circuit.</p>		

Series vs. Parallel Circuits



SERIES

- Closed circuit
- Not common in homes
- Unreliable wiring method
- Failure affects all devices/bulbs



PARALLEL

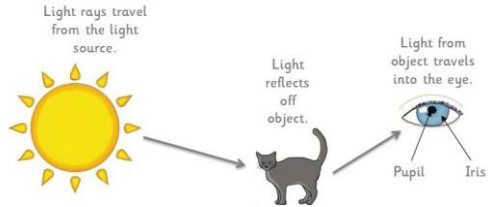
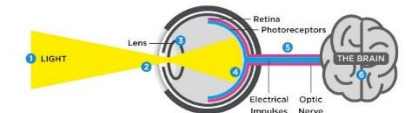
- Closed circuit
- Commonly used in homes
- Reliable method of wiring
- Failure does not affect all devices/bulbs

the spruce

Medium term plan – Year 6 – Autumn 1 – Science, Electricity.						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	Know that the discovery and use of electricity is a historically recent development.	Know common Circuit symbols from previous learning: cell, bulb, switch and wire.	Know that voltage is a way of measuring how powerful an electrical source is.	Know that voltage is a way of measuring how powerful an electrical source is. Know that in some circuits the current needs to do more work than in others (resistance / load)	Know that voltage is a way of measuring how powerful an electrical source is. Know that in some circuits the current needs to do more work than in others (resistance / load)	Know that electrical circuits come in a range of sizes and designs. know that if you change something in a circuit it may change how it functions.
Key learning focus for the lesson (s)	<p>Important discoveries in electricity. Discuss how we use electricity in our everyday lives and he different sources of electricity we use. Explore or research key events in the development of electricity. Benjamin Franklin, Alessandro Volta, Michael Faraday, Thomas Edison, Nikola Tesla. Create a timeline of key discoveries.</p>	<p>Circuit diagrams and symbols. Use circuit symbol flashcards to revisit previous learning. Ensure all learners are familiar with, cell, wire, lamp and switch. Teach additional symbols. Identify is circuits will function or not. Learners build circuit based on provided diagrams. Record as a diagram key for use in future sessions.</p>	<p>Effects of greater or lesser voltage on a circuit. Where have we seen the word volt? Refer back to Alessandro Volta. Can we find the voltage on our batteries? Build a simple circuit and use a voltmeter to measure the voltage at different points. Does it change? Add additional cells to the circuit, measure the volts in the circuit. What effect doe greater volts have? Record as a table and diagram including the voltmeter.</p>	<p>Effects of longer and shorter wires in the circuit. Build a test circuit including a lamp and a volt meter. Power with a single AA cell so we know the source is 1.5V. Discuss and predict what will happen to the voltage in the circuit as more wire is added. In 2m steps add additional lengths of wire from a spool. What effect does this have on the reading in the Voltmeter? Record in a table and add a relationship statement.</p>	<p>Effects of thicker or thinner wires in the circuit. Using what they learned in the previous week learners predict and plan an investigation in to the effects of using thicker wires and metal rods to conduct electricity, Which variable will they change?</p>	<p>Series and parallel circuits. Examine and discuss diagrams of serial and parallel circuits. How are they different? Trace and orally describe the route taken by the current through the different circuits. Will these two circuits behave the same? What do we predict will happened with the voltage in these circuits? Build the two example circuits and measure the voltage. What do we notice? What would happen is we added even more lamps? Record as diagram</p>

						and a table. Add a brief explanation of what they have observed.
Potential amendments for SEND	<p>Provide pre-teaching opportunities for learners to hear vocabulary prior to the lesson, to support their access and engagement in whole-class teaching.</p> <p>Provide learners with worked examples to use as a model whilst completing independent work.</p> <p>Scaffold learning to make it accessible for all, e.g., if writing up the method for their experiment, a learner with writing difficulties could verbally explain for you or a teaching assistant to scribe, note-take or film explaining their answers.</p>					

Year 6 Autumn 2 Science,

Theme: Light	Cross Curricular Links: How can we light our Anderson shelters?	
Key vocabulary	Prior learning	Next steps
<ul style="list-style-type: none"> • Prism • Reflect • Refract • Lens • Pupil • cornea 	<ul style="list-style-type: none"> • Know that we need light to see and that dark is the absence of light. • Know that light from the sun can be dangerous. • Know that shadows are formed when light od blocked by an opaque object 	<p>The spectrum of light including visible <u>and invisible</u>. Reflection and refraction, light passing through a prism.</p>
Key assessment questions		
<p>Can you tell me how light travels? Can you explain how shadows are formed? Can you explain how our eyes see? How do we see colour?</p>		
Knowledge to be taught		Useful pictures / diagrams / weblinks
<ul style="list-style-type: none"> • Know that our eyes see light reflected from or given out by an object. • Know that light travels in straight lines and can be reflected and refracted. • Know that white light is made up of a spectrum of colours. • Use mirrors and prisms to reflect, refract and separate light. • Explain in words and diagrams the function of the human eye. • Investigate the shape and size of shadows and relate the shape of a shadow to the shape of the opaque object because light travels in straight lines. 		<p>Year 6: Light STEM Light - Year 6 Science - BBC Bitesize Light Knowledge Organiser (Year 6) Teaching Resources (tes.com)</p> <p>iris gets bigger to let in as much light as possible. If there is no light at all, we cannot see anything.</p>  <p>The diagram illustrates the process of seeing. Light rays from the sun (labeled 'Light rays travel from the light source.') hit a cat (labeled 'Light reflects off object.'). Light from the cat travels into the eye (labeled 'Light from object travels into the eye.'). The eye's pupil and iris are shown.</p>
Definitions / technical vocabulary for teachers.		
<p>Refract – the process of splitting light into separate wavelengths by passing it through a substance or object. For example light passing through a glass prism or water droplets forming a rainbow.</p>  <p>The diagram shows the path of light into the eye. Light enters through the lens (1), hits the retina (2), where photoreceptors (3) convert it into electrical impulses (4) that travel through the optic nerve (5) to the brain (6).</p>		

Medium term plan – Year 6 – Autumn 2 – Science, Light						
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Pre- requisite knowledge required before the lesson.	Know from previous learning that light travels in straight lines and that it reflects off surfaces.	Know that light travels in straight lines. That sight is one of the senses through which we experience the world and that our sense of sight is through our eyes.	Know that light travels in straight lines and that darkness is an absence of light.	Know that light travels in straight lines and that we see objects when light reflects off of them.	Know that light can be seen as different colours and that we see objects when light reflects off of them.	Know that light is made up of different colours and that we see colours when they reflect off of an object.
Key learning focus for the lesson (s)	To understand how light travels; exploring and explaining how objects are seen. In a darkened room use torches to illuminate different objects. Observe that we can see the objects that are within the beam of light. Spray air freshener in to the air, observe that we can see the light beam and that it travels in a straight line. Discuss and predict how light is travelling to the object and how we can then see it. Explain that light is reflecting off of the object and back in to	Parts of the eye and how light is seen. Check understanding from the previous session that we see when light is reflected from an object and enters our eye. Using a combination of models and diagrams explore and explain the journey if an image from entering the eye. Use correct technical vocabulary. Learners orally rehearse before completing a diagram of the human eye and writing a short explanation of how we see.	To understand and explain how shadows are formed and how and why they change shape. Learners have previously investigated shadows how they are created and making them larger and smaller. Revisit this previous learning and ensure understanding. Experiment with different sizes and shapes of templates in from t of large light sources, what do we observe? Why can't we see shadows in brightly lit rooms? Can we make an object have two shadows?	To explore how light can be reflected and change direction; understanding the effects light can have when shone onto or through an object. Revisit that light always travels in straight lines and we can change their direction by reflecting them. Experiment with torches and prisms. Can we bend the light? What happens to the beam of light when it passes through the prism? Record as a diagram and short explanation.	To be able to explain the cause and effect of refraction. What did we observe last week? What happened to light when it entered a prism? If there is visible Sun experiment with prisms in a tray of water. Can we make a rainbow? Photograph if possible. Where are the colours coming from? Observe that just like some materials absorb or reflect different colours (wavelengths) of light refraction can split white light into the separate colours.	To be able to understand the spectrum of light and investigate how this is formed. Revisit the learning from the previous session, splitting white light in to the different colours that make it up. In a darkened room shine an ultra violet light. Why can't we see the beam? (you can only see UV light when it reflects off of an object) demonstrate an infrared heat lamp. Again we can't see a beam of light but we can feel the heat. These are wavelengths

	<p>our eye and that we see the light that has reflected. That's why it is hard to see in the dark. Record as a labelled diagram showing how we see light.</p>		<p>Record findings as diagrams with short explanations.</p>		<p>Record as a diagram and short explanation.</p>	<p>(colours) of light that humans can't see. Display a diagram of the spectrum of light. Show that the visible spectrum is only part of it. Learners complete their own diagram of the spectrum of light from ultraviolet to infrared.</p>
<p>Potential amendments for SEND</p>	<p>Bring abstract concepts to life through concrete resources and comparisons.</p> <p>Scaffold learning to make it accessible for all, e.g., if writing up the method for their experiment, a learner with writing difficulties could verbally explain for you or a teaching assistant to scribe, note-take or film explaining their answers.</p>					

