Subject Curriculum Overview

Science

	Autumn		Spring		Summer	
N	All About Me, Traditional Tales, Winter and Christmas		People Who Help Us, Growing, Magic: Witches and Wizards		Animals, Seaside and Transport	
	To know	To know how to	To know	To know how to	To know	To know how to
	Autumn Senses experiment. Children to have senses boxes. Children to have a feely box, smell box, listening box, looking box etc. Children to see if they can use their senses to work out what all of the Autumn items are. **3 little pig – Which is the best material to build a house out of**? The children will use different materials to build houses out of – straw, sticks, sugar cubes, lego, card, paper. Which material is the strongest, most stable, water proof? To begin to ask questions about aspects of the familiar world such as the place where I live or the natural world. To begin to talk about some things I have observed such as plants, animals, natural and found objects.	**Autumn Senses experiment.** Children to have senses boxes. Children to have a feely box, smell box, listening box, looking box etc. Children to see if they can use their senses to work out what all of the Autumn items are. **3 little pig – Which is the best material to build a house out of**? The children will use different materials to build houses out of – straw, sticks, sugar cubes, lego, card, paper. Which material is the strongest, most stable, water proof? To begin to ask questions about aspects of the familiar world such as the place where I live or the natural world. To begin to talk about some things I have observed such	**Which beanstalk will grow the tallest?** Children to plant their own bean seeds and watch the roots and shoots grow. Which beanstalk will be the tallest? Grow cress and make cress sandwiches **Can you make a magic potion?** Children Fill a jar halfway with vinegar, then add a few drops of one colour of food colouring and some glitter. Squeeze in some washing up liquid, stir, and place the jar on a tray. Ask a child to add a heaped teaspoon of baking soda, stir again, and watch the foaming MAGIC begin! To ask questions about why things happen and how things work. To Talk about some of the things they have observed.	**Which beanstalk will grow the tallest?** Children to plant their own bean seeds and watch the roots and shoots grow. Which beanstalk will be the tallest? Grow cress and make cress sandwiches **Can you make a magic potion?** Children Fill a jar halfway with vinegar, then add a few drops of one colour of food colouring and some glitter. Squeeze in some washing up liquid, stir, and place the jar on a tray. Ask a child to add a heaped teaspoon of baking soda, stir again, and watch the foaming MAGIC begin! To ask questions about why things happen and how things work. To Talk about some of the things they have observed.	**What does a caterpillar change into?** Children to care for caterpillars and observe their transformation into butterflies **How does a jellyfish glow?** Children learn in the ocean jellyfish can be clear as well as vibrant colours and many glow or are bioluminescent! This jellyfish craft creates a fun glowing jellyfish, you will see in the dark. To be able to simply explain the lifecycle of a butterfly. To be able to name and identify a variety of Mini beasts. To use their senses to explore the environment around them. To ask questions about why things happen and how things work. To be able to observe, find out about and identify	**What does a caterpillar change into?** Children to care for caterpillars and observe their transformation into butterflies **How does a jellyfish glow?** Children learn in the ocean jellyfish can be clear as well as vibrant colours and many glow or are bioluminescent! This jellyfish craft creates a fun glowing jellyfish, you will see in the dark. To be able to simply explain the lifecycle of a butterfly. To be able to name and identify a variety of Mini beasts. To use their senses to explore the environment around them. To ask questions about why things happen and how things work. To be able to observe, find out about and identify features in the place they live

	To observe and manipulate objects and materials and identify simple features. To identify and explore their senses. To understand that we use our ears to hear. To begin to identify the sounds heard. To identify different smells. To understand that we use our nose to smell. To begin to understand their sense of smell and taste. To use their senses to explore the environment around them. To be able to identify the season Autumn and the changes that happen in the environment around them To begin to know the properties of some natural and manmade materials To be able to explain the meaning of waterproof To be able to sort waterproof and non-waterproof materials Designing and making – To be able to build and construct with a wide range of objects selecting appropriate resources and adapting their work where necessary To begin to make predictions and test them. To begin to explain what has happened using scientific vocabulary	as plants, animals, natural and found objects. To observe and manipulate objects and materials and identify simple features. To identify and explore their senses. To understand that we use our ears to hear. To begin to identify the sounds heard. To identify different smells. To understand that we use our nose to smell. To begin to understand their sense of smell and taste. To use their senses to explore the environment around them. To be able to identify the season Autumn and the changes that happen in the environment around them To begin to know the properties of some natural and manmade materials To be able to explain the meaning of waterproof To be able to sort waterproof and non-waterproof materials Designing and making – To be able to build and construct with a wide range of objects selecting appropriate resources and adapting their work where necessary To begin to make predictions and test them. To begin to explain what has happened using scientific vocabulary	To be able to observe various growth of plants/seeds. To be able to know what a plant needs to grow. To be able to plant cress seeds/ beans To be able to start to develop an understanding of growth, decay and changes over time. To know how to look after living things in the environment. To begin to make predictions and test them. To begin to explain what has happened using scientific vocabulary	To be able to observe various growth of plants/seeds. To be able to know what a plant needs to grow. To be able to plant cress seeds/ beans To be able to start to develop an understanding of growth, decay and changes over time. To know how to look after living things in the environment. To begin to make predictions and test them. To begin to explain what has happened using scientific vocabulary	features in the place they live and in the natural world (e.g. observe real caterpillars changing into butterflies). To show care and concern for living things in the environment. To show curiosity and interest in their environment. To be able to recognise the features of common mini-beasts. To know Many jellyfish can produce their own light or are bio-luminescent. To know that Jellyfish are made of a smooth, bag-like body and they have tentacles with tiny stinging cells to catch prey. To know The mouth of the jellyfish is found in the centre of its body.	and in the natural world (e.g. observe real caterpillars changing into butterflies). To show care and concern for living things in the environment. To show curiosity and interest in their environment. To be able to recognise the features of common mini-beasts. To know Many jellyfish can produce their own light or are bio-luminescent. To know that Jellyfish are made of a smooth, bag-like body and they have tentacles with tiny stinging cells to catch prey. To know The mouth of the jellyfish is found in the centre of its body.

R	All About Me, Fantasy, Autumn, Winter and Christmas		People Who Help Us, Where We Live, Space		Animals and Dinosaurs, Under the Sea, Pirates		
	To know	**To know how to**	**To know**	**To know how to**	**To know**	**To know how to**	
	Autumn 1 Focus Experiment: Senses Experiment **Children to have senses boxes. Children to have a feely box, smell box, listening box, looking box etc. Children to see if they can use their senses to work out what it is.** I know the five different senses are sight, touch, taste, smell, hearing I know how to use my sense of smell. I know how to use my sense of touch. I know how to use my sense of sight. I know how to use my sense of hearing. I know how to make a prediction. I know how to see if my prediction was right or not. I know how to explain results and compare them to my predictions. Autumn 2 Focus Experiment: Ice Experiment. What melts ice faster, salt or sand to free the treasure? Make a prediction then test your idea. Need a bowl of ice cubes with treasure frozen inside (eg coins, gems, etc), trays for children to use for their investigation, bowls of salt and sand with teaspoon	**Autumn 1 Focus Experiment: Senses Experiment** **Children to have senses boxes. Children to have a feely box, smell box, listening box, looking box etc. Children to see if they can use their senses to work out what it is.** I can use my sense of smell to predict what the item is. I can use my sense of touch to predict what an item is. I can use my sense of hearing to predict what an item is. I can use my sense of sight to predict what an item is. I can make a prediction using topic related science language. I can explain if my prediction was right or not using the results. Autumn 2 Focus Experiment: Ice Experiment. What melts ice faster, salt or sand to free the treasure? Make a prediction then test your idea. Need a bowl of ice cubes with treasure frozen inside (eg coins, gems, etc), trays for children to use for their investigation, bowls of salt and sand with teaspoon and paper and pencils to record observations. Children to take three ice cubes and	**Spring 1 Focus Experiment: How can a Superhero fly?** **Children to make superhero parachutes. Children to throw them off the climbing frame to see what materials make a good parachute/cape for a superhero.** I know the names of different materials**.** I know how some materials are better than others for parachutes. I know how to test my idea. I know how to make a prediction. I know how to verbally recall my results. I can use topic related scientific vocabulary. I can compare my prediction to the outcome. I can describe in some detail what happened. **Spring 2 Focus Experiment: Blast off – Rocket mice – Need milk cartons of different sizes, cones of paper for the mice, felt tips for decorating mice. Can you blast your mouse into space? Children decorate a mouse then use the milk cartons to blast them into the air. Make a prediction - Which milk**	**Spring 1 Focus Experiment: How can a Superhero fly?** **Children to make superhero parachutes. Children to throw them off the climbing frame to see what materials make a good parachute/cape for a superhero.** I can compare different materials. I can describe what different materials feel like. I can explain what I have observed. I can verbally explain my prediction. I can verbally recall what has happened. I can use topic related vocabulary to explain what happened. I can describe what I can see happening. I can explain if my prediction was right or not.	**Summer 1 Focus Experiment: Dinosaur Egg Hatch** **Children to hatch a baking soda dinosaur egg.** I know what happens when you mix baking soda and vinegar. I know how to test my idea. I know how to make a prediction. I know how to verbally recall my results. I can use topic related scientific vocabulary. I can compare my prediction to the outcome. I can describe in some detail what happened. **Summer 2 Focus Experiment: Making boats does it float or sink?** **Children to make boats out of different items. Children to test the boats to see which sink and which float.** I know the names of different materials**.** I know how some materials are better than others for floating. I know which items sink and which items float. I know how to test my idea. I know how to make a prediction. I know how to verbally recall my results.	**Summer 1 Focus Experiment: Dinosaur Egg Hatch** **Children to hatch a baking soda dinosaur egg.** I can describe what happens when we combine baking soda and vinegar. I can explain what I have observed. I can verbally explain my prediction. I can verbally recall what has happened. I can use topic related vocabulary to explain what happened. I can describe what I can see happening. I can explain if my prediction was right or not. **Summer 2 Focus Experiment: Making boats does it float or sink?** **Children to make boats out of different items. Children to test the boats to see which sink and which float.** I can compare different materials. I can describe what different materials feel like. I can explain what I have observed. I can verbally explain my prediction. I can verbally recall what has happened.	

	and paper and pencils to record observations. Children to take three ice cubes and drop a teaspoon of salt on one, sand on another and nothing on the last. Observe what is happening to each ice cube. Which one will release the treasure the quickest? I know how to make my test fair. I know how to make a prediction. I know how to see if my prediction was right or not. I know how to explain results and compare them to my predictions. I know that salt makes ice melt faster. I know how to describe what happened in an experiment in some detail. In our All About Me topic we look at: Human growth cycle I know the human growth lifecycle baby, toddler, child, teenager, adult, elderly I know something that is different about each stage. Healthy Eating I know different foods we should eat to stay healthy. I know how to sort healthy and unhealthy foods. I know that it is ok to have unhealthy foods sometimes.	drop a teaspoon of salt on one, sand on another and nothing on the last. Observe what is happening to each ice cube. Which one will release the treasure the quickest? I can make my test fair by using the same amount of sand and salt. I can explain what happened in an experiment using scientific language appropriate to the topic. I can make a prediction using topic related science language. I can explain if my prediction was right or not using the results. I can describe what happened in an event in some detail. I can describe what I see happening. In our All About Me topic we look at: Human growth cycle I can order the human life cycle baby, toddler, child, teenager, adult, elderly. I can explain the difference between each stage. Healthy Eating I can talk about different healthy foods. I can talk about which foods we need to eat to keep our bodies healthy.	**carton will make the mouse go highest? Test your ideas** I know how to make a prediction. I know scientific vocabulary. I know how to make a test fair. I know how to discuss and feedback my results. I know how to describe what happened in some detail. I can compare my prediction with the result. **Seasonal Changes: Spring** I know what happens in spring. I can observe what happens in spring. I know that spring is a season. I know vocabulary around spring. **I know about the lifecycle of a plant (standalone lesson)** **I know what a plant needs to grow.** **In our Space topic we look at: Planets** I know the names of the planets in our solar system. I know facts about each planet in our solar system. I know which planet is closest to Earth. I know that the sun is a giant star. **Famous Astronauts**	S**pring 2 Focus Experiment: Blast off – Rocket mice – Need milk cartons of different sizes, cones of paper for the mice, felt tips for decorating mice. Can you blast your mouse into space? Children decorate a mouse then use the milk cartons to blast them into the air. Make a prediction - Which milk carton will make the mouse go highest? Test your ideas** I can make a verbal prediction. I can make sure I have a fair test. I can explain what I observe using topic related scientific language. I can talk about the results. I can describe what I can see happening. I can explain if my prediction was right or not. **Seasonal Changes: Spring** I can explain what happens in spring.	I can use topic related scientific vocabulary. I can compare my prediction to the outcome. I can describe in some detail what happened. **In our Animals topic we look at:** **Habitats of animals in the jungle/safari** I know different types of habitats that animals live in. I know compare different habitats. I can name different animals. I know vocabulary around habitats and animals. **Life cycles of animals.** I know the lifecycle of an animal. **Animal body parts** I know the names of different body parts of an animal. **Dinosaurs** I know that dinosaurs lived a long time ago. I know that dinosaurs are extinct I know that you can find fossils I know who Mary Anning was	I can use topic related vocabulary to explain what happened. I can describe what I can see happening. I can explain if my prediction was right or not. I can explain which items sink and which items float. **In our Animals topic we look at:** **Habitats of animals in the jungle/safari** I can say different types of habitats that animals live in. I can compare different habitats. I can name different animals. **Life cycles of animals.** I can explain the life cycle of an animal. **Animal body parts** I can label the different body parts on an animal. I can talk about the different parts of an animal. **Dinosaurs** I can explain that dinosaurs were here a long time ago. I can explain that dinosaurs are extinct. I can explain that Mary Anning was a palaeontologist and fossil collector.	

	Exercise I know why exercise is important. I know how exercise keeps us healthy, fit and strong. I know how exercise makes your heart beat faster. I know different types of exercise I can do to stay fit and healthy. Senses I know the five different senses are sight, touch, taste, smell, hearing I know how to use my sense of smell. I know how to use my sense of touch. I know how to use my sense of sight. I know how to use my sense of hearing. Human Body I know the different parts of the human body. I know what each part of my body is called. I know how to label the different parts of the body. I know vocabulary linked to the human body. Seasonal Changes in Autumn. I know what happens in autumn. I can observe what happens in autumn. I know that autumn is a season.	I can talk about which foods are unhealthy. I can sort healthy and unhealthy foods. Exercise I can talk about why exercise is important. I can talk about what exercise does to our hearts. I can list different types of exercise. I can explain different exercises I like and don't like. Senses I can use my sense of smell to predict what the item is. I can use my sense of touch to predict what an item is. I can use my sense of hearing to predict what an item is. I can use my sense of sight to predict what an item is. Human Body I can talk about the different parts of the human body. I can explain what each part of my body is called. I can label the different parts of the body. I can use the correct vocabulary to describe the parts of my body. Seasonal Changes in Autumn. I can explain what happens in autumn. I can observe what happens in autumn. In our Winter Topic we look at:	I know who Neil Armstrong is. I know who Tim Peake is. I can compare the different moon landings. I know that Neil Armstrong and Tim Peake are both astronauts. I know that the moon reflects light from the sun. I know that the moon orbits Earth. **Light and Dark** I know which items are a source of light. I know which items can reflect light.	I can observe what happens in spring. **I can talk about the lifecycle of a plant (standalone lesson)** **In our Space topic we look at:** **Planets** I can explain the different planets in our solar system. I can explain facts about different planets. I can explain that the planets orbit around the sun. **Famous Astronauts** I can explain how astronauts landed on the moon. I can explain that the moon reflects light from the sun. I can explain that the moon orbits the Earth. **Light and Dark**			

	I know vocabulary around autumn. In our Winter Topic we look at: Seasonal changes in Winter I know what happens in winter. I can observe what happens in winter. I know that winter is a season. I know vocabulary around winter.	Seasonal changes in Winter I can explain what happens in winter. I can observe what happens in winter.		I can explain which items reflect lights and which items don't. I can explain which items are a source of light.			

Circle Times in Reception

Every half term we spend a circle time session on:

Healthy Eating

I can talk about the importance of eating healthily. I can talk about the different foods we need to eat to stay healthy. I can talk about why it is important to have a balanced diet. I can talk about foods that are unhealthy. I know that it is ok to have unhealthy food sometimes.

Good oral hygiene: Brushing our teeth and why it is important.

I know why it is important to look after your teeth. I know how to brush my teeth. I know that it is important to see a dentist regularly. I know that sugary drinks and food are bad for your teeth. I can talk about how to brush my teeth. I can say when you should brush your teeth.

The importance of exercise

I can talk about why exercise is important. I can talk about the different types of exercise you can do. I know the different types of exercises you can do to stay fit, healthy and strong. I know that exercise makes your heart beat faster. I know that exercise makes you feel good. I can explain what happens when you exercise. I can explain why exercise keeps you fit, healthy and strong.

The importance of sleep

I know why it is important to get a good amount of sleep. I know good activities to do to help me be calm before bed. I know that sleep gives your body time to rest and recover for the next day. I know that sleep gives you energy. I know that if you do not get enough sleep it makes you feel grumpy.

The importance of being clean

I know how to keep my body clean. I can explain how to keep my body clean. I know that it is important to look after your body.

The importance of road safety.

I know how to be a safe pedestrian. I can explain how to stay safe when crossing the road. I know I should stop, look and listen then check again. I know that it is important to cross with an adult.

The importance of sensible amounts of screen time

I know why it is important to have sensible amounts of screen time. I can explain why it is important to have sensible amounts of screen time.

Knowledge	**To know how to**
I know I can make a prediction	To know how to make a prediction
I know I can ensure I carry out a fair test.	To know how to ensure I carry out a fair test.
I know I can gather and put away equipment	To know how gather and put away equipment
I know I can take it in turns.	To know how to take it in turns.
I know I can share my results verbally with my peers/teacher.	To know how to share my results verbally with my peers/teacher.
I know I can explain what happened with some detail.	To know how to use scientific language.

	I know I can use scientific language. I know I can use topic related language. I know I can explore how things work. I know I can select the right tools to carry out my plan. I know I can show others how things work. I know I can describe different textures. I know I can test my ideas. I know I can use a magnifying glass to explore things more closely. I know I can find information in non-fiction books.	To know how to use topic related language. To know how to select the right tools and equipment to carry out my plan. To know how to explore how things work. To know how to use my senses to explore natural materials. To know how to talk about things that are similar and different. To know how to talk about how materials can change. To know how to explore and talk about different forces. To know how to form ideas and concepts to help me make sense of the world. To know how to show others how to do things / how things work. To know how to describe in detail what I am doing. To know how to discuss and describe the different textures I feel. To know how to test my ideas To know how to use magnifying glasses to explore different ways of looking. To know how to describe what is happening. To know how to explore non-fiction books related to the topic.

	Animals Including Humans		**Materials**		**Plants**	
	To know	**To know how to**	**To know**	**To know how to**	**To know**	**To know how to**
1	- To know the five senses. - To know how we use the five senses. - To investigate whether older children are also the tallest. - To know that animals as well as humans are living. - To understand the term life-cycle. - To know the names of some animals and the names of their babies (eg cat, kitten). - To know the life cycle of humans and frogs.	- To begin to know how to use simple scientific language (name the senses). - To know how to make simple observations using the senses. - To know how to complete a pre-constructed table to record results. - With help, to know how to group living things in different ways. - To begin to know how to present data in a pictogram. - With help, begin to know how to make sensible predictions based on existing knowledge.	- To name some different materials. - To know that different materials have different properties. - To know that some materials will float and some will sink. - To know that some materials are waterproof. - To know that some materials are magnetic. - To know that different materials are used for their different properties. - To know that some materials are natural and some a man-made.	- To know how to use scientific vocabulary to describe materials and their properties. - To know how to sort materials based on different criteria. - To know how to discuss how to set up a simple test. - With help, to know how to carry out a simple test. - With help, to know how to make a simple prediction. - To know how to record results in a pre-constructed table.	- To identify the different parts of a plant (seed, roots, stem, leaves, flower) and describe their function. - To know that plants are living things and require light and water to grow. - To be able to know that plants provide a range of foods for humans and animals. - To be able to match some plants to their food of origin. - To be able to describe how a seed germinates and grows into a plant. - To be able to sequence the lifecycle of a bean.	- To know how to add annotations to drawings. - To know how to make simple observations. - To know how to make simple predictions. - To know how to observe changes to a growing plant over time. - To know how to sort a variety of objects by different criteria. - To know how to use scientific vocabulary. - To know how to make simple measurements using non-standard and standard units of measure.

<table>
<tr><td></td><td></td><td>- To know how to record simple visual representations of observations made.
- Begin to know how to use simple scientific language to talk about what they have found out.</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="2">Forces</td><td></td><td></td></tr>
<tr><td></td><td colspan="2">Light and Dark</td><td>To know</td><td>To know how to</td><td></td><td></td></tr>
<tr><td></td><td>To know</td><td>To know how to</td><td rowspan="2">- To understand that a force makes things move.
- To understand that forces can make things speed up and slow down.
- To understand the word friction.
- To explore how things can be moved by a push or a pull.</td><td rowspan="2">- To know how to record results in a pre-constructed table.
- To know how to sort and group objects based on own observations.
- To know how to record results by adding annotations to drawings.
- To know how to record observations as drawings.
- With help, to know how to make simple predictions.
- To begin to know how to use simple scientific language to talk about what they have found out.</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td></td><td>- To explain the differences between night and day.
- To know that dark means there is no light and that we cannot see in the dark.
- To know that we need light to see things and that it comes from different sources.

- To know that shiny objects need a light source if they are to shine.
- To be able to name a variety of diurnal and nocturnal creatures.</td><td>- To know how to draw on everyday experiences to help answer questions.
- To know how to sort a variety of objects by different criteria.
- With help, to know how to carry out a simple investigation.
- With help, to know how to make a simple prediction.</td></tr>
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				- To know how to present findings as a pictogram. - To know how to use results to talk about what they have found out.		
	Autumn		**Spring**		**Summer**	
	Sound		**Plant and Animal Habitats**		**Materials**	
	To know	**To know how to**	**To know**	**To know how to**	**To know**	**To know how to**
2	- To identify objects that make sound. - To know that there are different ways of making sounds. - To identify pleasant and unpleasant sounds. - To know that we can protect our ears from loud sounds. - To know that sound varies with distance from the source. - To know that a sound gets fainter as they travel away from a source.	- To know how to observe and identify sounds by listening carefully. - To know how to sort a variety of objects by different criteria from what they have observed. - To know how to draw on their everyday experience to help answer questions. - To know how to carry out a simple investigation and record the results.	To compare the differences between things that are living, dead and have never been alive. To explain some of the seven life processes. To understand what a habitat is. To describe some of the different habitats common to the UK. To identify and name some plants and animals in their habitats. To understand what a microhabitat is.	To know how to use a hand lens to observe small objects. To begin to make careful observations of living things. To record observations as words and pictures. To begin to use secondary sources of information for research. To identify some living things using supporting materials to aid identification.	To name some different materials that objects are made from. To know that different materials have different properties. To know that different materials are used for their different properties. To know that some materials are natural and some are manufactured/man-made To know that the shape of some materials can	To use scientific vocabulary to describe materials and their properties. To sort materials based on different criteria. Discuss how to set up a simple test. To carry out a simple test. To make a simple prediction. To record results in a table. To construct a table to record results To recognise that some materials change when they are heated To make observations and simple comparisons

		- To know how to make suggestions on a method for a simple experiment. - To know how to make simple predictions.	To identify microhabitats in our local area. To identify and name some of the plants and animals (minibeasts) found in local microhabitats. To understand that most living things live in habitats to which they are suited. To explain some of the ways different animals are suited to their habitats. To understand that living things in a habitat rely on each other in order to survive. To create a simple food chain with a producer and two consumers.	To begin to sort and classify living things in different ways. To use scientific vocabulary.	be changed by squashing, bending, twisting and stretching. To begin recognize that some materials change when heated or cooled. To know about a person who has developed new, useful materials (Charles Macintosh – Scottish chemist and inventor who invented waterproof fabric).	To use secondary sources to research a scientist.
	Electricity		**Friction**		**Keeping Healthy**	
	To know	**To know how to**	**To know**	**To know how to**	**To know**	**To know how to**

	- To know some uses of electricity. - To know that static electricity can attract two objects towards each other. - To understand the dangers of mains electricity. - To know that some appliances use batteries. - To know that connections to batteries must be made through positive and negative terminals. - To know what a circuit needs to light a bulb. - To use knowledge of circuits to fix circuits that don't work. - To suggest ways we can use less electricity.	- To know how to sort and classify objects that do/do not use electricity. - To know how to make accurate observations. - In groups, to know how to decide on how to make a test fair. - To begin to know how to make decisions about what equipment to use. - To know how to create a simple switch.	- To know that friction is a force between surfaces in contact. - To know the difference between high and low friction. - To know that high and low friction can be useful to us. - To know how we use friction in our everyday lives. - To know that water resistance is a type of friction. - To know that air resistance is a force.	- To know how to predict which materials will have a high or low friction rate. - In groups, to know how to decide on how to make a test fair. - To know how to discuss what needs to be measured. - To know how to make predictions. - To know how to record results in tables and graphs. - To know how to use results to record and explain what has happened.	- To know the different food groups and examples of each. - To know what is meant by a balanced diet. - To know which foods should be eaten more and less frequently. - To know how exercise affects the body. - To know why exercise is an important part of keeping healthy. - To know what medicines are used for. - To know that medicines can be very dangerous if not used correctly.	- To know how to present results in a tally chart and bar chart. - To know how to reflect and comment on own diet. - To know how to sort foods/activities into groups healthy/not healthy. - To know how to draw on observations to answer scientific questions. - To know how to make sensible predictions. - To know how to explain results. - To know how to measure temperature.
	Autumn		**Spring**		**Summer**	
	The Human Body		**Magnets**		**Mixing and Separating Materials**	
	To know	**To know how to**	**To know**	**To know how to**	**To know**	**To know how to**

<table>
<tr><td rowspan="5">3</td><td rowspan="5">- To know why we have a skeleton
- To know the scientific names for some bones (patella, pelvis, radius, femur, scapula, clavicle).
- To know two different types of joints (ball and socket, hinge).
- How know how muscles work.
- To know that humans have different types of teeth and their functions.
- To know what to do to look after our teeth.
- The know the effects of acid on teeth and bones.</td><td rowspan="5">- To know how to observe and record relationships between structure and function of bones and joints.
- To know how to compare and contrast different bones, joints and teeth.
- To know how to make a model to represent the human spine.
- To know how to suggest and explore their own questions about the human skeleton.
- With help, to know how to decide how to make a test fair and begin to identify when a test is not fair.
- With support or as a group, to know how to set up a comparative and/or fair test.
- To know how to gather data to help answer a question.
- To know how to use scientific vocabulary to make predictions.
- To know how to use scientific knowledge to begin to explain predictions.</td><td>- To know the words, attract, repel and poles in magnets.
- To know that a force is a push or a pull.
- To know whether size affects the strength of a magnet.</td><td>- To know how to make scientific observations
- To know how to record scientific observations.
-To know how to use scientific vocabulary relating to magnets.
- To know how to sort materials according to whether they are metal/non-metal and magnetic/not magnetic and consider the relationship between them.
- To know how to collect evidence from an investigation.
- To know how to use results to draw conclusions.
- With guidance, to know how to set up a fair test.</td><td>- To know the difference between solids and liquids in terms of particle structure.
- To know the words soluble and insoluble.
- To know what happens when we mix certain materials.
- To know that we can separate some mixtures of materials.</td><td>- To begin to know how to choose equipment to separate a mixture of materials.
- To know how to write a scientific method as a set of simple instructions.
- To know how to make scientific observations.
- To know how to make scientific predictions based on existing knowledge.</td></tr>
<tr><td colspan="2">Keeping Warm</td><td colspan="2">Light and Shadows</td></tr>
<tr><td>To know</td><td>To know how to</td><td>To know</td><td>To know how to</td></tr>
<tr><td>- To know that some things change temperature.
- To know what we mean by room temperature.
- To know that we measure temperature in degrees Celsius.</td><td>- To know how to make accurate measurements of temperature using a thermometer.
- To know how to make scientific predictions based on everyday experiences.</td><td>- To know some examples of different sources of light.
- To know some examples of different reflectors of light.
- To know how light travels.</td><td>- To know how to make scientific observations.
- To know how to record scientific observations.
- To know how to explain observations using scientific knowledge and vocabulary.</td></tr>
</table>

		- To know how to use results to draw simple conclusions.		- To know how to collect results in a table. - To know how to present results in a graph. - To know how to use results to consider whether they have met their predictions. - To know how to suggest a question that can be investigated. - With guidance, to know how to plan a fair test.	- To know how shadows are formed. - To know how and why shadows might change. - To know that different materials create different shadows. - To know the words transparent, translucent and opaque. - To know why we can use shadows to tell the time.	- With guidance, to know how to plan a fair test. - To know how to observe and record changes over time. - To know how to present results in a table and bar chart. - To know how to use results to draw conclusions.
	Autumn		**Spring**		**Summer**	
	Rocks, Fossils and Soil		**Sound**		**Changes of State**	
	To know	**To know how to**	**To know**	**To know how to**	**To know**	**To know how to**
4	- To know how sedimentary, igneous and metamorphic rocks are formed. - To name sedimentary (limestone, chalk, sandstone), igneous (basalt, granite, obsidian, pumice) and metamorphic (marble, slate) rocks. - To know the rock cycle. - To know how cast and mould fossils are formed. - To know how resin fossils are formed.	- To know how to make scientific observations. -To know how to develop descriptions of rocks using scientific vocabulary. - To know how to use observations to identify, classify and group rocks and fossils. - To know how to plan and carry out a fair test investigation. - To know how to make predictions and give reasons for them.	To identify how sounds are made. To understand that sounds are vibrations. To recognise that vibrations from sounds can travel through different materials to the ear. To understand how our ear hears sounds. To name some of the parts of the ear. To understand that the volume of a sound is how loud it is.	To know how to make careful observations about sound. To know how to record observations using labelled diagrams. To know how to write a prediction and suggest reasons for it. To know how to independently record data in a table. To know how to use information from data to say what you found out.	- To know the particle structure for solids, liquids and gases differs. - To know the names of some solids, liquids and gases. - To know the process of evaporation. - To know the process of condensation. - To know that water can exist in different states. - To know the water cycle.	- To be able to plan a fair test to investigate the properties of liquids. - To know how to make predictions. - To know how to make careful observations. - To know how to measure and record capacity. - To know how to draw conclusions from results. - To know how to use secondary sources to investigate gases.

	- To know the difference between trace and body fossils. - To know how weathering and erosion can turn rocks into soil. - To know the different layers of the soil profile. - To know the words durable and permeable with regards to rocks.	-To know how to make decisions about what equipment to use. - To know how to make accurate measurements. - To know how to record data. - To know how to use scientific vocabulary to explain results from experiments. - Begin to know how to explain differences in results. - To know how to suggest further investigations	To know that louder sounds have more energy and are made of stronger vibrations. To know that we measure the volume of sounds in decibels. To understand that pitch describes how low or high a sound is. To know that low sounds have low frequencies and high sounds have high frequencies. To investigate how the pitch of a sound can be changed. To know what a sound insulator is.	To know how to use scientific vocabulary accurately to describe how the ear hears sounds. To know how to use a data logger to record information about sound volume.		- To know how to plan a fair test to investigate what affects the rate of evaporation of water. - To know how to make a visual representation of the water cycle.
			Plants		**Electricity**	
			To know	**To know how to**	**To know**	**To know how to**
			-To know how plants are useful to us. - To know the structure and function of the different parts of a flower. - To know the process of pollination. - To know different methods of seed dispersal. - To know the life cycle of flowering plants.	- To know how to make scientific observations. - To know how to observe and record relationships between the structure and function of different parts of a flower. - To know how to use a model to represent pollination. - To know how to plan a fair test.	- To know different sources of power. - To know the dangers of electricity. - To know the symbols for components in circuits. - To know the words conductor and insulator. NB MUCH OF THIS IS COVERED IN YEAR 2 ELECTRICITY TOPIC.	- To be able to draw scientific circuit diagrams. - To be able to create simple working electrical circuits. - To be able to investigate whether an object is a conductor or insulator. - To be able to make predictions. - To be able to record results in a table.

			- To know the function of plant roots. - To know the process of photosynthesis.	- To know how to draw conclusions from results using scientific understanding. - To know how to use scientific vocabulary.	CONSIDER REVIEWING AND UPDATING TO INCORPORATE MORE CHALLENGE.	- To be able to use knowledge of conductors and insulators to design a switch.
	Autumn		**Spring**		**Summer**	
	Keeping Healthy		**Earth, Space and Beyond**		**Living Things**	
	To know	**To know how to**	**To know**	**To know how to**	**To know**	**To know how to**
5	- To know the different food groups and what they provide for our body. - To know the importance of a balanced diet and the balanced plate/food wheel. - To know what scurvy is, how it is caused and prevented/cured. - To know the structure and function of the heart and circulatory system. - To know how our circulatory system responds to exercise. - To know the negative effects of smoking on the body.	- To know how to make observations over time (of pulse rate) and suggest reasons for changes. - To know how to find out how scientific ideas have changed/developed over time. - To know how to use secondary sources to develop their scientific knowledge and understanding. - To know how to make decisions about which variables to change, measure and keep the same to carry out a fair test. - To know how to record data and results with increasing complexity using different formats (eg	- To know that the Earth, sun and moon are spherical and how we know (satellite images, ships sailing past the horizon, world travel, etc.) - To know the relative sizes of the sun, moon and Earth. - To know the names of the different planets of the solar system using a mnemonic. - To know more detailed facts about a planet in our solar system. - To know the different phases of the moon. - To know what causes sunrise and sunset.	- To know how to base scientific ideas on evidence. - To know how to use a model to show how the sun, Earth and moon move in relation to each other. - To know how to use secondary sources to research a planet in our solar system. - To know how to present facts and information to a group. - To know how to use a simple model to describe and explain the phases of the moon. - To know how to plan a fair test. - To know how to make predictions. - To know how to use a data logger to record results.	- To know and understand the 7 characteristics of all living things. - To know why and how we can classify living things. - To know how animals are classified. (The five vertebrate animal groups.) - To know what a habitat is and how animals can adapt to their habitats. -To know the words producer and consumer. - To know that food chains represent a flow of energy. - To begin to know the concepts of natural selection and evolution. - To know that there are scientific questions that	- To know how to use similarities and differences to compare & contrast and classify living things. - To know how to use classification keys. - To know how to use developing scientific knowledge & understanding and vocabulary to communicate more abstract concepts. - To know how to offer reasons for their opinions, especially when they differ from those of their peers.

		tables, line graphs, models, etc.) - To know how to comment on whether results support a prediction. - To know how to use scientific knowledge & understanding and vocabulary to explain findings and answer initial questions. - To know how to draw a valid conclusion. - To begin to know how to think about the reliability of results.		- To know how to annotate graphs to explain results including anomalies. - To know how to draw valid conclusions based on data recorded.	do not yet have an answer.	
					Life cycles	
					To know	**To know how to**
					- To know the lifecycle of amphibians, insects, birds and mammals.	- To know how to suggest reasons for similarities and differences. - To know how to use secondary sources of information to identify and classify. - To know how to present ideas in a variety of ways. - To know how to use scientific language to describe life cyles. - To know how to compare the lifecycles

						of two different creatures.
	Autumn		**Spring**		**Summer**	
	Reversible and Irreversible changes		**Forces 2 – Friction and Water Resistance**		**Microorganisms**	
	To know	**To know how to**	**To know**	**To know how to**	**To know**	**To know how to**
6	- To know that mixing some materials causes them to change. - To know the difference between reversible and irreversible changes. - To know how to separate materials that have been mixed to make a reversible change. - To know how heating and cooling can change materials. - To know that burning as an irreversible change. -To know that carbon dioxide is produced when vinegar and bicarb are mixed – chemical	- To know how to use scientific knowledge, understanding and terminology to discuss observations. - To know how to independently record results in a table. - To know how to use a data logger to record changes in temperature. - To know how to independently form a conclusion based on evidence from an investigation. - To know how to independently plan an investigation.	- To know that friction can be useful and not useful. - To know which forces act on objects in water. -To know why people seem lighter when walking on the moon. -To know that weight is measured in Newtons and Mass is measured in grams and kilograms. -To know the difference between an observation and an explanation -To know the importance of collecting multiple results and how that aids accuracy.	- To know how to use a force-metre to measure weight and mass. - To know how to make predictions based on existing knowledge and provide reasons for them. - To know how to independently plan and carry out a fair test investigation. - To know how to decide whether to repeat any test readings and explain why. - To know how to decide what apparatus to use to collect results.	- To know that there are very small organisms called micro-organisms which can be harmful. - To know that micro-organisms are often too small to be seen - To know that there are different types of micro-organism. - To know how scientific research is carried out. - To know that scientific research provides evidence to pose and	- To know how to plan and carry out a fair test. - To know how to make observations and record results. - To know how to make predictions using scientific knowledge and understanding. - To know how to use scientific ideas when describing simple processes. - To k ow how to use evidence not opinion to support scientific argument

	reaction – change of state. -To know that filtration is used to separate insoluble materials like sand and water. -To know that evaporation is used to separate soluble materials like salt and water. -To know the difference between soluble and insoluble. -To know that water when heated can have a reversible change – link to the water cycle from Y4. -To know the difference between an observation and explanation. -To know that when there is vigorous bubbling a gas is being released.	- To know how to identify variables to change, measure and keep the same to make a test fair. -To know how to describe a scientific process in a series of steps. -To know how to make accurate observations and measurements. -To know how to interpret data -To know how to make predictions based on evidence. -To know how to use evidence not opinion to support scientific argument-explanations.	-To know the force of friction and where it acts. -To know friction is greater on rougher surfaces and less on smoother surfaces. -To know the force of upthrust and how it acts on objects in water. -To know that although the mass stays the same, objects weigh less in water than in air because the upward push of water is greater than the upward push of air. -To know what the term buoyancy means. -To know that the Plimsoll line is a reference mark located on a ship's hull that indicates the maximum depth to which the vessel may be safely immersed when loaded with cargo.	- To know how to present results in a line graph. - To know how to identify evidence that supports or refutes their ideas. - To know how to independently form a conclusion based on test results. - To know how to discuss the reliability of results. - To know how to suggest ways to improve an investigation to create more reliable results. -To know how to make careful measurements. -To know how to investigate the relationship between weight and mass and draw a conclusion. -To know how to make careful observations. -To know how to write scientific observations. -To know how to write scientific observations and explanations and the difference between the two. -To know how to use scientific vocabulary.	answer further questions. - To know that micro-organisms can cause common illnesses - To know how and why some illnesses can be treated. - To know that scientific ideas about diseases are based on evidence. - To know that micro-organisms cause food to decay and how that happens. - To know that mould on food is caused by micro-organisms and to identify risks to selves and others. - To know that some micro-organisms can be beneficial. - To know that decay can be beneficial. -To know the consequences if decay did not take place. - To know which materials decay.	- To know how to draw conclusions from evidence. - To know how to make accurate observations and measurements. - To begin to know how to consider the ethical and moral issues linked to scientific research.

				-To know how to structure an investigation and display results. -To know how to take an average of results to get a final measurement. -To know how to plan a fair test.	- To know how compost is made.	
	Forces 1 – Gravity and Air Resistance		**Light**		**Electrical Circuits**	
	To know	**To know how to**	**To know**	**To know how to**	**To know**	**To know how to**
6	- To know what forces are and how we measure them.- To know that forces are measured in Newtons. - To know that gravity is a force. - To know the difference between weight and mass. - To know that air resistance slows moving objects down. - To know Isaac Newton was born in 1643. -To know that Isaac Newton became famous for his work on gravity and his three laws of motion. -To know that he also worked on theories for light.	- To know how to use a force-metre to measure weight and mass. - To know how to make predictions based on existing knowledge and provide reasons for them. - To know how to independently plan and carry out a fair test investigation. - To know how to decide whether to repeat any test readings and explain why. - To know how to decide what apparatus to use to collect results. - To know how to present results in a line graph. - To know how to identify evidence that	-To know that light travels in straight lines. -To know that light can be reflected in a mirror to change its direction. -To know the structure and function of the human eye. -To know that in order to see there needs to be a light source. -To know that light cannot travel through opaque objects. -To know the process of how the human eye allows us to view objects. -To know the scientific names for different parts of the eye (pupil, iris, lens, retina, optic nerve).	-To know how to make accurate measurements. -To know how to collect data accurately. -To know how to present data in a graph. -To independently know how to form a conclusion based on evidence from an investigation. -To know how to write a detailed method for an investigation. -To know how to suggest ways to improve an investigation to create more reliable results. -To know how to use scientific language to describe observations. -To know how to use scientific knowledge and	- To know what is meant by a series and parallel circuit. - To know what conductors and insulators are. - To know the effects of changing components in a circuit. - To know when to repeat tests for reliability.	- To know how to identify patterns in results. -To know how to describe any causal relationships between variables. - To know how to use component symbols to draw circuit diagrams. - To know how to use a model to explain scientific ideas (burglar alarm circuit). - To know how to suggest reasons for unexpected results. - To know how to refine a scientific question to make it testable.

	-To know the difference between an observation and an explanation -To know the importance of collecting multiple results and how that aids accuracy.	supports or refutes their ideas. - To know how to independently form a conclusion based on test results. - To know how to discuss the reliability of results. - To know how to suggest ways to improve an investigation to create more reliable results. -To know how to make careful measurements. -To know how to find out about people who have changed the history of science through secondary sources. -To know how to make careful observations. -To know how to write scientific observations. -To know how to write scientific observations and explanations and the difference between the two. -To know how to use scientific vocabulary. -To know how to structure an investigation and display results.	-To know the terms 'angle of incidence' and 'angle of reflection'. -To know the term refraction. -To know that light will change direction when it moves through certain materials (water, glass, Perspex, etc). -To know factors that do/do not affect refraction. -To know that Sir Isaac Newton discovered that white light was made up of the colours of the rainbow. -To know that sunlight refracted through a prism will split into the colours of the rainbow. -To know how rainbows are formed naturally. -To know that scientific ideas have changed over time.	understanding to explain observations. -To know how to communicate findings using scientific diagrams. -To know how to use scientific vocabulary to describe abstract ideas. -To know how to use models to describe and explain scientific ideas (ie. to use a periscope to explain how light travels and is reflected off mirrors). -To know how to use observations to suggest scientific questions that could be investigated. -To know how to independently plan and carry out a fair test investigation into refraction. -To know how to decide when it's appropriate to repeat readings and justify why this is necessary. -To know how to use evidence from experiments to draw conclusions. -To know how to use scientific language, diagrams and models to		

		-To know how to take an average of results to get a final measurement. -To know how to plan a fair test.		explain abstract scientific ideas. -To know how to independently ask a scientific question. -To know how to refine a scientific question so that it becomes testable.		