

Science

Autumn Term



Intent,
Implementation,
Impact

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Year 1 - Science - Everyday materials

What do we know about everyday materials?

1. What is Science and its relationship with everyday materials?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and be able to develop an answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. Where will I find everyday materials?

| | |
|-----------------------|--|
| Intent | Children will identify and name a range of everyday materials |
| Implementation | Children to sort and label a range of objects by the material that they were made from |

3. What are the similarities and differences between everyday materials

| | |
|-----------------------|---|
| Intent | Children will understand the term property in relation to materials |
| Implementation | Children to test a range of objects and find which objects are waterproof, which float or sink. Children will be able to group together objects that share the same properties. |

4. What materials are used for a model space rocket?

| | |
|-----------------------|--|
| Intent | Assessment of the unit, linking to the D&T unit |
| Implementation | Children to label their model space rocket naming materials independently Children to complete an end of unit quiz to identify materials and their properties. Children will complete a post-quiz |
| Impact | Be able to accurately name and identify the material that an object is made from. Be able identify the simple properties of a range of everyday materials Discuss why materials have been selected for a particular purpose. |

Year 1 Science - Seasonal changes
How do Seasons change? (Spring / Summer)

1. What is Science and its relationship with the four Seasons?

| | |
|-----------------------|---|
| Intent | Children will understand the term relationship and explore an answer the question |
| Implementation | Children to annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz Children to name the four seasons and identify what is different about each season. |

2. What is weather like in each season?

| | |
|-----------------------|---|
| Intent | Identify the most common weather in each season |
| Implementation | Match photographs of weather to each season and describe them. Children to go on Wellie walks in each season to identify the changes that they see around them first hand. |

3. How are animals affected by the seasons?

| | |
|-----------------------|---|
| Intent | Children to learn how animals have to adapt and change their behaviour in order to survive in the different seasons |
| Implementation | Children to describe what an animal does in each season. |

4. How are humans affected by the seasons?

| | |
|-----------------------|--|
| Intent | Children to learn how humans have to adapt and change their behaviour in order to survive in the different seasons |
| Implementation | Children to sort which clothes they wear in each season and describe why they have made that choice. |

5. What is a weather station

| | |
|-----------------------|---|
| Intent | Children to identify what a weather station is and what it does. |
| Implementation | Children to use a weather station to record the weather over the course of a week. Repeat this in each of the seasons to enable children to identify changes to the weather. Children will complete a post-quiz |
| Impact | Be able to identify the four seasons in the UK. Be able to identify which weather and clothes are matched to each season. Be able to identify the effect that seasons have on animals including humans and what they have to do in order to adapt to their environment. |

Year 1 - Science: Seasonal changes
How do Seasons change? (Autumn / Winter)

1. What is Science and its relationship with the four Seasons?

| | |
|-----------------------|---|
| Intent | Children will understand the term relationship and explore an answer to the question |
| Implementation | Children to annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz Children to name the four seasons and identify what is different about each season. |

2. What is weather like in each season?

| | |
|-----------------------|---|
| Intent | Identify the most common weather in each season |
| Implementation | Match photographs of weather to each season and describe them. Children to go on Wellie walks in each season to identify the changes that they see around them first hand. |

3. How are animals affected by the seasons?

| | |
|-----------------------|---|
| Intent | Children to learn how animals have to adapt and change their behaviour in order to survive in the different seasons |
| Implementation | Children to describe what an animal does in each season. |

4. How are humans affected by the seasons?

| | |
|-----------------------|--|
| Intent | Children to learn how humans have to adapt and change their behaviour in order to survive in the different seasons |
| Implementation | Children to sort which clothes they have to wear in each season and describe why they have made that choice. |

5. How is day length affected by the seasons?

| | |
|-----------------------|---|
| Intent | To identify that it is not just the weather that changes during the seasons, that it also has an effect on the length of the day. |
| Implementation | Children investigate what happens to the day length in each season. Which season has the longest day and the shortest day? |

6. What is a weather station?

| | |
|-----------------------|---|
| Intent | Children to identify what a weather station is and what it does. |
| Implementation | Children to use a weather station to record the weather over the course of a week. Repeat this in each of the seasons to enable children to identify changes to the weather. Children will complete a post-quiz |
| Impact | Be able to identify the four seasons in the UK. Be able to identify which weather and clothes are matched to each season. Be able to identify the effect that seasons have on animals including humans and what they have to do in order to adapt to their environment. |

Year 2 Science - Plants

How do Plants grow?

1. What is Science and its relationship with Plants?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What are the main parts of a plant?

| | |
|-----------------------|--|
| Intent | Children will know the main parts of a plant and their function. |
| Implementation | Match the correct parts of the plant to their meaning. |

3. What do plants need to grow and survive?

| | |
|-----------------------|--|
| Intent | Children will know what plants need to survive. |
| Implementation | Look at the results of their comparative test. Measure the growth of cress with a ruler. Record the growth of cress by drawing or writing. |

4. Can we make scientific observations?

| | |
|-----------------------|--|
| Intent | Children will use simple and appropriate scientific language and terminology to talk about what has been found out. |
| Implementation | Investigate what constitutes a scientific and unscientific observation. Practise making observations scientific/specific/measured/quantitative. Sort pre-written observations into scientific/unscientific categories. |

5. What is the Life cycle of a plant?

| | |
|-----------------------|---|
| Intent | Children will know the life cycle of a plant. Children will know a way we can tell that plants are living things? |
| Implementation | Describe and order the stages in the life cycle of a plant. Look at life processes. Children will complete a post-quiz |
| Impact | Know that seeds/bulbs need water/air/suitable temp to germinate. Identify and name the petal/leaf/anther/stem/root and explain their function. Know that a plant needs light, water, carbon dioxide/warmth to grow and survive. Be able to write their own scientific opinion about a plant using appropriate scientific language and terminology. Recall the main stages in the life cycle of common plants and explain something plants do that shows us that plants are living things. |

Year 3 Science - Rocks
How are rocks formed?

1. What is Science and its relationship with the formation of Rocks?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. How are rocks different from each other?

| | |
|-----------------------|---|
| Intent | Children will be able to identify different properties of rocks, using scientific vocabulary such as, permeable, impermeable, light, heavy, rough and smooth. |
| Implementation | To conduct a scientific investigation comparing different rocks and their properties. |

3. What is a fossil?

| | |
|-----------------------|--|
| Intent | Children will develop an understanding of what a fossil is and the fossilisation process. |
| Implementation | Sequencing of pictures of the fossilisation process and identify common fossils, such as an ammonite |

4. What can we learn from fossils?

| | |
|-----------------------|--|
| Intent | Children will be able to explain how studying rocks and fossils can tell us things about the history of our Earth and the animals that live/lived on it. |
| Implementation | An investigation into the methods of palaeontology and geology |

5. What is dirt made from?

| | |
|-----------------------|--|
| Intent | Children will know that dirt is made up of layers, with many components and that there are different types of soil. |
| Implementation | Creating a model of sedimentary soil to investigate the components and creating a scientific drawing of the model, with labelled components. Children will complete a post-quiz |
| Impact | Build upon their understanding of our Earth and how it has been formed and changed. Have the opportunity to work scientifically, conducting basic investigations. Be able to use this understanding and investigation to analyse rocks and identify fossils, with discussion as to how they were formed. Develop an awareness of relevant fields of science and how they operate, using vocabulary such as palaeontology and geology. |

Year 3 Science - Forces and magnets

What is a force?

1. What is Science and its relationship with forces?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What is magnetic force?

| | |
|-----------------------|--|
| Intent | Children will understand how magnetic forces and fields work using vocabulary of attraction and repulsion. |
| Implementation | An introduction to magnets and an investigation into how and why they attract and repel other magnets. |

3. What objects attract or repel magnets?

| | |
|-----------------------|---|
| Intent | Children will explain what the scientific model is and what a fair test is and why they are important for science experiments. Children will know that somethings are attracted to a magnet and some are not and begin to predict this. |
| Implementation | Scientific experiment testing magnets against everyday items. |

4. How do magnetic poles affect how magnets work?

| | |
|-----------------------|--|
| Intent | Children will research how magnets and magnetic fields relate to magnetic poles and understand how that force impacts certain aspects of our world. |
| Implementation | A research project Children will complete a post-quiz |
| Impact | Be able to describe what a force is and how they are influenced by different conditions. Understand magnetic forces, their attraction and repulsion and how the force of that varies, using vocabulary of forces, fields and poles. |

Year 4 Science - Sound

How is sound made and changed and how do I hear?

1. What is Science and its relationship with Sounds?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. How do sounds get to my ear?

| | |
|-----------------------|--|
| Intent | Children will recognise that vibrations from sounds travel through a medium to the ear. |
| Implementation | Put pictures in correct order starting with vibrations pass from the sound source to particles in the air. |

3. What is pitch and how is it changed?

| | |
|-----------------------|--|
| Intent | Children will find patterns between the pitch of a sound and the features of the object that produced it. |
| Implementation | Design an instrument on which children can demonstrate pitch change. Children write an explanation of what happens to the parts of the instrument that vibrate in order for the pitch to change. |

4. How does volume change?

| | |
|-----------------------|--|
| Intent | Children will find patterns between the volume of a sound and the strength of the vibrations that produced it. |
| Implementation | Investigate sound-proofing materials by planning and conducting a fair test, considering all the variables and how to record the results |

5. What happens to sound when you get further away from it?

| | |
|-----------------------|---|
| Intent | Children will recognise that sounds get fainter as the distance from the sound increases. |
| Implementation | Investigate what happens to volume when you move away from the sound source. Write an explanation of how to change volume. Children will complete a post-quiz |
| Impact | Understand that sound is made when something vibrates. Understand how sound travels and what happens in our ear. Know what pitch and volume is and how it can be changed. |

Year 4 - Electricity
How do we make a circuit work?

1. What is Science and its relationship with electricity?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What components make up an electrical circuit?

| | |
|-----------------------|--|
| Intent | Children will understand what components are needed to make an electrical circuit. |
| Implementation | Children will make simple electrical circuits identifying and naming basic parts, including cells, wires, bulbs, switches and buzzers. |

3. When does an electrical circuit work and not work?

| | |
|-----------------------|--|
| Intent | Children be able to identify the components needed to make a working circuit. |
| Implementation | Investigate how to make a working circuit and experiment by adding different components. |

4. How does a switch work?

| | |
|-----------------------|---|
| Intent | Children will recognise that an open switch breaks a circuit and a closed switch completes a circuit. |
| Implementation | Investigate how to make a switch using a piece of card, a metal paper clip and two split pins. Record using symbols in book along with explanation of an off switch makes a gap in the circuit and an on switch creates a complete circuit. |

5. What are common insulators and conductors of electricity?

| | |
|-----------------------|--|
| Intent | Children will recognise common insulators and conductors. They will associate metals as good conductors. |
| Implementation | Test materials in a circuit to sort conductors and insulators and record results in a table. Children will complete a post-quiz |
| Impact | Identify appliances that need electricity to work. Understand that an electrical circuit needs a power source and needs to be complete in order to work. They will understand that if there is a break in the circuit, the electricity won't flow. Recognise and name insulators and conductors of electricity. |

Y5/6 Science Plan A -Evolution

How has life evolved?

1. What is Science and its relationship with Evolution?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. How do animals and plants adapt to suit their environment?

| | |
|-----------------------|--|
| Intent | Children will know that animals have evolved and adapted over time to suit their environment. |
| Implementation | Children will look at a range of plants and animals and explain characteristics that each have to suit the environment they live in. |

3. What is evolution?

| | |
|-----------------------|--|
| Intent | Children will use the work of scientists to understand the process of evolution. Children will understand how fossils can be used as evidence to study changes over time. |
| Implementation | To look at the work of scientists and recognise how they have helped us to develop our understanding of evolution. Children will examine fossils to explain how they can be used to identify how living things have changed over time. Children will complete a post-quiz |
| Impact | Understand the term evolution and the important research Charles Darwin's undertook, recalling key points regarding his theories. Be able to link characteristics and traits along family lines, in humans, animals and plants and how they need to adapt to suit their environments. |

Science

Spring Term



Intent,
Implementation,
Impact

Year 1 Science - Animals including humans

How do we group animals?

1. What is Science and why do we group animals?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and explore an answer to the question |
| Implementation | Children to annotate the Knowledge Organiser with prior knowledge Children to complete a pre-quiz |

2. What are mammals?

| | |
|-----------------------|--|
| Intent | To be able to identify and name a variety of common UK mammals |
| Implementation | Children will identify a variety of mammals and compare and describe some of their features. |

3. How are birds, fish and amphibians and reptiles different?

| | |
|-----------------------|--|
| Intent | To be able to identify and compare a variety of common UK birds, fish amphibians and reptiles. |
| Implementation | Children will compare the characteristics of a variety of birds and reptiles, then answer questions or describe animals in their own words. Children will consider similarities and differences between some fish and amphibians. They will also learn about some fish/amphibian life cycles and describe what they have learned in their own words |

4. What are the parts of animal bodies called?

| | |
|-----------------------|---|
| Intent | To describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) |
| Implementation | Children identify the different names for parts of animal bodies. Children to label the parts of a variety of animal bodies. Children to compare the skeletons of different animals. What is similar, what is different? |

5. What are the parts of my body called?

| | |
|-----------------------|---|
| Intent | To identify, name, draw and label the basic parts of the human body |
| Implementation | Children will draw and label a picture of their body |

6. What are carnivores, herbivores and omnivores?

| | |
|-----------------------|--|
| Intent | To identify and name a variety of common animals that are carnivores, herbivores and omnivores |
| Implementation | Children will describe what a variety of different animals eat, then sort animals using Venn diagrams or tables. Children will match foods to different animals. Children will identify what food animals need in order to keep healthy. Children will complete a post-quiz |
| Impact | Be able to name the groups of the animal kingdom. Be able to name and describe a range of common animals from the UK and some from the wider world. Be able to name parts of animal bodies, including humans. Understand the term carnivore, omnivore, and herbivore. Be able to explain what animals eat and how to ensure that they are healthy. |

Year 2 Science - Everyday materials

Why do we use everyday materials?

1. What is Science and its relationship with a range of materials?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What are the properties of a variety of materials?

| | |
|-----------------------|---|
| Intent | Children will be able to distinguish between an object and the material from which it is made. Children will know the simple physical properties of some materials. |
| Implementation | Look at a selection of items, identify the different materials they are made from and identify their physical properties. Compare and group together a variety of everyday materials on the basis of their simple physical properties. |

3. Why might a certain material not be useful?

| | |
|-----------------------|--|
| Intent | Children will know the uses of different everyday materials. |
| Implementation | Record uses of different everyday materials using a grid format and photo cards. Investigate what would happen if we changed the material of their items. What is their hypothesis? |

4. Can we compare the suitability of some materials?

| | |
|-----------------------|---|
| Intent | Children will know the suitability of different everyday materials. |
| Implementation | Identify materials (wood, metal, plastic, glass, brick, rock, paper and cardboard) and ascertain the most appropriate material for particular uses (using scientific vocabulary i.e. transparent, opaque, durable, rigid, permeable, etc.). |

5. How can materials be changed?

| | |
|-----------------------|---|
| Intent | Children will know how the shapes of objects made from some materials can be changed. |
| Implementation | Observe a selection of objects, how could the shape be changed? Explore/record changing the shape of the objects by gently squashing, bending, twisting or stretching them. Children will complete a post-quiz |
| Impact | Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Use scientific vocabulary i.e. transparent, opaque, etc and identify the uses of everyday materials. Know which properties make some materials suitable for different purposes and know which properties make some materials unsuitable for different purposes. Be able to explain why different materials can be used to make the same object and know and demonstrate ways the shapes of some objects can be changed. |

Year 3 - Light

Why is light important?

1. What is Science and its relationship to light?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What is reflection?

| | |
|-----------------------|---|
| Intent | Children will understand how reflection occurs and from what sort of surfaces. They will also begin to develop an understanding of how reflection influences light. |
| Implementation | An investigation into how and why light reflects from some surfaces and not others. |

3. How are shadows formed?

| | |
|-----------------------|---|
| Intent | Children will explain how and when shadows are formed. |
| Implementation | Scientific experiment creating shadows in different situations. |

4. Why do shadows change size?

| | |
|-----------------------|--|
| Intent | Children will research how changes in shadows can be made by changing certain factors. |
| Implementation | Scientific experiment creating a fair test to influence the size of the shadow. |

5. How is light from the sun dangerous?

| | |
|-----------------------|---|
| Intent | Children will research how light from the sun can be dangerous and how they can protect themselves from the dangers. |
| Implementation | A research project where children will present the dangers of light and how they can protect their eyes. Children will complete a post-quiz |
| Impact | Recognise they need light in order to see things and dark is the absence of light. Notice that light is reflected from surfaces. Recognise that shadows are formed when light is blocked by a solid object and find patterns in the way shadows change in size. |

Year 4 Science - Living things and their habitats

What classification of animals live where?

1. What is Science its relationship with Living things and their habitats?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What is a classification key?

| | |
|-----------------------|---|
| Intent | Children will be able to use a classification key to group, identify and name a variety of living things. |
| Implementation | Children complete classification keys using headings such as mammals, invertebrates etc. |

3. How can environmental change endanger living things?

| | |
|-----------------------|---|
| Intent | Children will recognise that environments can change and these changes can pose a danger to living things. |
| Implementation | Children research a recent news story that focuses on environmental change and the affect it has had on living things. They report back to their peers with their findings using a PowerPoint presentation. Children will complete a post-quiz |
| Impact | Understand that animals (including humans) can be grouped. Consider features that will help to classify them. Understanding how environmental change can endanger living things as well as understand what positive changes humans can make to protect living things. |

Year 4 Science - Animals including humans

How do humans process food?

1. What is Science and its relationship with the Food Chain?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What parts make up the human digestive system?

| | |
|-----------------------|--|
| Intent | |
| Implementation | Children explore the human digestive system by creating a model (using tights, banana, orange juice etc.) and then write an explanation. |

3. What is a food chain?

| | |
|-----------------------|---|
| Intent | Children will construct and interpret food chains, identifying producers, predators and prey. |
| Implementation | Children investigate food chains and record examples in books. Children will complete a post-quiz |
| Impact | Be able to name and understand the functions of different teeth. Know what happens to food when it enters the body. Understand that all food chains start with a plant and end with a top predator. |

Science

Summer Term



Intent,
Implementation,
Impact

Year 1 Science - Plants
How do we identify plants?

1. What is Science and its relationship with Plants?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What plants grow in my garden?

| | |
|-----------------------|--|
| Intent | To identify and describe garden plants. |
| Implementation | Children will look at a variety of plants and trees. Children will label pictures with their names and decide whether they are a plant or a tree. Children to draw and label a plant that grows in their garden. Can they identify if it is a plant or a tree? |

3. What plants grow in the wild?

| | |
|-----------------------|--|
| Intent | To identify and describe wild plants. |
| Implementation | Children will use a classification key to identify a variety of plants. Then they will stick the plant in the correct place on their key. Children will play plant dominoes. |

4. Do trees have leaves all year?

| | |
|-----------------------|--|
| Intent | To identify and describe a range of trees. |
| Implementation | Children to sort the trees into groups of evergreen and deciduous. They will write a sentence explaining what evergreen and deciduous mean. Can they name any evergreen or deciduous trees? Children will go on a tree identification walk. They will use the key to identify trees within the school grounds. |

5. What are the different parts of a plant called?

| | |
|-----------------------|--|
| Intent | To identify the different parts of a plant. |
| Implementation | Children to complete the drawing of a tree and of a small flowering plant. Children will write a description to describe the parts of the plant. |

6. What is the life cycle of a plant?

| | |
|-----------------------|---|
| Intent | To make observations of growing plants. |
| Implementation | Children to record what their plant was like when they planted it and what it is like now. Write a sentence explaining how it has changed. Children to complete a split pin seed story wheel and add captions to describe what happens to the seed. Children will complete a post-quiz |
| Impact | Be able to describe how to plant a bean. Be able to identify and name some common garden and wild plants. Be able to identify some common British trees and say whether they are deciduous or evergreen. Be able to label simple parts of plants and trees. Be able to explain the life cycle of a plant and describe some of the changes that happen as a plant grows. |

Year 2 Science - Living things and habitats
What is a living thing and where do they live?

1. What is Science and its relationship with an organism?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship Children will develop and answer to the question |
| Implementation | Children to annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What is a habitat?

| | |
|-----------------------|--|
| Intent | Children will know what a habitat is. |
| Implementation | Children will visit a local habitat and look at it closely to see what kinds of plants, animals and non-living things are in it. Observe and record using mapping and labelling skills. |

3. Why do animals live in specific habitats?

| | |
|-----------------------|--|
| Intent | Children can describe a habitat and identify the animals that live in it. |
| Implementation | Children will identify how an animal is suited to its habitat by asking the question 'How do I survive?' |

4. Can we match living things to their habitats?

| | |
|-----------------------|--|
| Intent | Children can identify microhabitats and name the minibeasts found there. |
| Implementation | Children will use findings to compare 2 microhabitats. |

5. How do animals find their food?

| | |
|-----------------------|---|
| Intent | Children will know how living things in a habitat depend on each other. |
| Implementation | Children will label animals in different habitats dependency. |

6. What is a food chain?

| | |
|-----------------------|--|
| Intent | Children can use a food chain to show how animals get their food. |
| Implementation | Children will draw food chains and identify the habitat they would find them in. Children will complete a post-quiz |
| Impact | Explain how life processes can tell us if something is living, dead or has never been alive. Know that a habitat is a place where animals and plants live and where they can find everything they need to stay alive. Be able to describe a world habitat (Rainforest, Arctic, Ocean, Desert) and identify the animals that live in it and know that most living things live in habitats to which they are suited. Be able to describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Order living things in a food chain (producer, consumer, predator). |

Year 2 Science - Animals including humans

What do animals need to survive?

1. What is Science and its relationship with the stages in an animal's life cycle?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and will develop and answer to the question. |
| Implementation | Children to annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What are the names of different animals young?

| | |
|-----------------------|--|
| Intent | Children will know how animals change as they grow. Children will know the names of animals and their young. |
| Implementation | Investigate how animals grow (mammals, birds, amphibians, reptiles). Match animals and their babies (mammals, birds, amphibians, reptiles). |

3. What do animals and humans need to survive?

| | |
|-----------------------|--|
| Intent | Children will know the 3 basic needs of animals, including humans. Children know the difference between carnivores, herbivores and omnivores. |
| Implementation | Describe the basic needs of humans and other animals by labelling. |

4. How can we look after our bodies?

| | |
|-----------------------|---|
| Intent | Children will know the importance of exercise, healthy eating and keeping clean. |
| Implementation | Explore and record the effects exercise has on the human body. Design a menu that has the right amount of each food type. Hygiene Hero's Game. Use a magnifying glass to look closely and record what is seen. (Glitter Bugs) Children will complete a post-quiz |
| Impact | Name the different life stages in the human timeline (baby, toddler, child, teenager, adult, elderly) and know key features of what humans are like during the different stages of their lives. Describe the main changes as young animal offspring grow into adults (at least: between egg and adult bird; between egg and adult insect; between baby and adult mammal) and name animals and their young. Demonstrate their knowledge in describing the basic needs of animals, including humans, for survival (water, food and air). Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. |

Year 3 Science - Plants

How do plants keep themselves alive?

1. What is Science and its relationship to Plants?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. What job does each part of the plant do?

| | |
|-----------------------|---|
| Intent | Children will be able to identify what the main function of each of the main parts of a plant is. |
| Implementation | Children will write descriptions for each of the functions of the main parts of the plants. |

3. What are the stages of a plant's life cycle?

| | |
|-----------------------|---|
| Intent | Children will recap prior knowledge of a lifecycle and develop an understanding the process of a plant's lifecycle. |
| Implementation | Sequencing of pictures of the plants lifecycle and writing a description for each stage. |

4. What does a plant need to grow?

| | |
|-----------------------|---|
| Intent | Children will be able to explain how different conditions affect the growth of plants and will know what conditions are optimal for plants to grow. Children will recap different soil types and will consider the effect this might have on a plants growth. |
| Implementation | An investigation, in small groups, into the best conditions for plants to grow in. |

5. How does water travel through a plant?

| | |
|-----------------------|--|
| Intent | Children will recap the importance of well hydrated soil and roots, and will investigate the process of water travelling through a plant. Children will begin to know how to set up their own experiment. |
| Implementation | Children will plan and conduct an experiment as to how we can observe how water travels through a plant. Children will complete a post-quiz |
| Impact | Build upon their understand of plants, their parts and their lifecycles. Have the opportunity to work scientifically, conducting basic investigations. Be able to use this understanding and investigation to analyse what plants need to grow and how plants absorb water. Develop an awareness of relevant fields of science and how they operate, using vocabulary such as biology and botany. |

Year 3 Science - Animals including humans

How do we group animals?

1. What Science and its relationship to grouping animals?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. How do human muscles work?

| | |
|-----------------------|---|
| Intent | Children will be able to identify what the main function of human muscles is. |
| Implementation | Children will assemble a picture of a human muscular system, labelling the main muscles. They will also write a paragraph about how muscles work. |

3. What is nutrition?

| | |
|-----------------------|--|
| Intent | Children will recap prior knowledge of nutrition and develop an understanding of what different animals need to thrive. |
| Implementation | Children will compare dietary needs of a selection of different animals. They will answer questions about the animals needs and draw conclusions from this comparison. |

4. What nutrition is good for humans?

| | |
|-----------------------|--|
| Intent | Children will be able to explain how different types of nutrition affect the growth and energy levels of humans and will know what nutrition is optimal for humans to grow and thrive. |
| Implementation | In small groups children will investigate the nutritional value of different foods, using this investigation they will create balanced meals justifying why each food is important for humans. Children will complete a post-quiz |
| Impact | Build upon their understanding of nutrition and its impact on animals including humans. Have the opportunity to work scientifically, conducting basic investigations. Be able to use this understanding and investigation to analyse what humans need to grow and thrive. Develop an awareness of relevant fields of science and how they operate, using vocabulary such as biology and nutritionist. |

Year 4

Science - States of matter

What is a state of matter?

1. What is Science and its relationship with States of Matter?

| | |
|-----------------------|---|
| Intent | Children will understand the terms relationship, States of Matter, and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. How do I measure temperature?

| | |
|-----------------------|--|
| Intent | Children will observe that some materials change state when they are heated/ cooled. |
| Implementation | Children observe that some materials change state when they are heated or cooled. They measure the temperature at which this happens in degrees Celcius. |

3. What happens to water when it is heated and cooled?

| | |
|-----------------------|--|
| Intent | Children will understand what happens to water and measure the temperature at which this happens. |
| Implementation | Children observe a kettle boiling with coloured water in it. Teacher catches the steam on a white board and children will be able to see that there are coloured water droplets on there. Write up findings in book. |

4. What is the water cycle?

| | |
|-----------------------|--|
| Intent | Children will identify how evaporation and condensation are linked with the water cycle. |
| Implementation | Children draw the water cycle in books, labelling with scientific vocabulary. Children will complete a post-quiz |
| Impact | Understand what the differences are between solids, liquids and gases. Observe that some materials change state when they are heated and cooled. Use their understanding to explain the water cycle. |

Year 5/6 Science Plan A - Animals Including Humans
How do we keep our heart healthy ?

1. What is Science and its relationship with Humans?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. How are nutrients and water transported within humans and animals?

| | |
|-----------------------|--|
| Intent | Children will know how nutrients are transported in humans and other animals. |
| Implementation | Children will sort statements to describe how nutrients are transported around the body. They will understand and be able to use correct terminology to explain the process of transporting nutrients around the circulatory system. |

3. What is the impact of diet, exercise and drugs on our bodies?

| | |
|-----------------------|--|
| Intent | Children will be able to explain how diet, exercise and drugs affect our bodies and lifestyle. |
| Implementation | Children will identify the different food groups and examples of foods that are in each of the groups. They will look at the effects different amounts and types of foods have on their bodies. Children will look at the effect of exercise on their bodies and identify the benefits of exercise. Children will be able to identify what drugs are and how they can effect body functions. Children will complete a post-quiz |
| Impact | Describe the way nutrients and water are transported within animals including humans. Identify the main parts of the human circulatory system and describe the functions of the main parts. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. |

Year 5/6 Science Plan A - Electricity
How can we vary electrical circuits?

1. What is Science and its relationship with Electricity?

| | |
|--|---|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |
| 2. What happens when electrical components are changed? | |
| Intent | Children will be able to explain what happens when you add components into an electrical circuit. |
| Implementation | Children will investigate the effects of adding components into an electrical circuit and be able to justify reasons for this. Children will complete a post-quiz |
| Impact | Recognise components that will make a working circuit. Be able to represent each component with a symbols when drawing diagrams. Be able to explain how adding different components effect the circuit and justify why. |

Year 5/6 Science Plan A - Light

How do we see?

1. What is Science and its relationship with Light?

| | |
|-----------------------|--|
| Intent | Children will understand the term relationship and develop and answer to the question |
| Implementation | Children will annotate the Knowledge Organiser with prior knowledge Children will complete a pre-quiz |

2. How do we see objects?

| | |
|-----------------------|--|
| Intent | Children will be able to explain how light is needed in order for our eyes to see objects. They will be able to name different parts of the eye and their functions. |
| Implementation | Label a diagram of the cross section of the eye and explain the function each part has and how this enables us to see objects. |

3. How do shadows change?

| | |
|-----------------------|--|
| Intent | Children will be able to explain how and why shadows change depending on the object/ light source. |
| Implementation | Children to plan and carry out an investigation about shadows. Children will decide on the criteria they would like to test and conduct a fair test in order to draw conclusions about how shadows change. Children will complete a post-quiz |
| Impact | Recognise that light travels in straight lines Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light from our eyes. Explain that we see things because light travels from light sources to objects then to our eyes. Be able to explain how shadows are formed and how they change depending on the position of the light source. |

Vocabulary Progression

Year 1/2 Working Scientifically Overview

New learning and vocabulary

properties, observe, test, magnifying glass, object, record, equipment

- Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science
- Know that we can use magnifying glasses to observe objects closely
- Know that we can test our questions to see if they are true
- Know that objects can be identified or sorted into groups based on their observable properties
- Know that we can write down numbers and words or draw pictures to record what we find

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Year 3/4 Working Scientifically Overview

Revision

properties, observe, test, magnifying glass, object, record, equipment

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New learning and vocabulary- ongoing from year 3

prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis

- Know that we can ask questions and answer them by setting up scientific enquiries
- Know how to make relevant predictions that will be tested in a scientific enquiry
- Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same
- Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches
- Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table
- Know how - with structured guidance - to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion
- Know how to precis a scientific enquiry write-up into a brief oral discussion of what was found in a scientific enquiry
- Know that scientific enquiries can suggest relationships, but that they do not prove whether a prediction is true
- Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry
- Know that the conclusions of scientific enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant - does this work with other plants/ different types of light/ etc)
- Know that they can draw conclusions from the findings of other scientists
- Know that a theory is an explanation of observations that has been tested to some extent and that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry

Year 3/4 Working Scientifically Overview

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New learning and vocabulary

line graph, relationship, outlier

- Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent variable when measuring effect of light on plant growth)
- Know how to identify conditions that were imperfectly controlled and can explain how these might affect results
- Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device
- Know how and when to repeat measurements, how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mis-measurement
- Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion
- Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary
- Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection)