CURRICULUM COVERAGE AND OVERIEW: **SUBJECT: SCIENCE**

KEY STAGE 1 NATIONAL CURRICULUM:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering question

LOWER KEY STAGE 2 NATIONAL CURRICULUM:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

UPPER KEY STAGE 2 NATIONAL CURRICULUM:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests

- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

<table>
<tr><th>YR GROUP / TERM</th><th>TOPIC</th><th>KEY CONTENT / LESSON SEQUENCE
KNOWLEDGE ACQUISITION</th><th>SKILLS ACQUISITION</th></tr>
<tr><td colspan="4"><u>Top 5 facts – Seasonal Changes – learnt throughout the academic year.</u>
1. There are four seasons across the year. They are Spring, Summer, Autumn, Winter.
2. There are different types of weather in the UK.
3. Different types of weather are associated with each season.
4. We can observe the weather and collect and record simple data based on the observations we make.
5. Changes across the seasons have an effect on trees, plants, animals and the way we live.</td></tr>
<tr><td>1 – Autumn</td><td>Animals including humans</td><td>Children will learn about human and animal bodies and consider similarities and differences between them.
Children will engage in a variety of activities including drawing and labelling the body, using their senses to conduct an investigation, describing their bodies and sorting animals into groups.
Children will observe the season and describe the weather associated with the season and look at the length of the day.
<u>Investigation: Senses experiment</u>
<u>Can you use all of your senses to find the missing teddy?</u>
Children use all of their senses to find the missing teddy – the teddy smells of mint, tastes of apple, sounds squeaky, feels soft etc.</td><td>• asking simple questions and recognising that they can be answered in different ways
• performing simple tests
• identifying and classifying
• using their observations and ideas to suggest answers to questions
• gathering and recording data to help in answering question</td></tr>
<tr><td colspan="4">Top 5 facts
1. Know the names of our body parts.
2. Humans have five senses. They are sight, sound, taste, smell, touch. Senses are associated with different parts of the body.
3. Identify and name a range of common animals.
4. There are some parts of the body that are specific to animals.
5. Animals have different diets – carnivore, herbivore, omnivore.</td></tr>
<tr><td colspan="4">KEY VOCABULARY: Carnivores herbivores omnivores fish amphibians reptiles birds mammals pets</td></tr>
</table>

ENGLISH LINKS OPPORTUNITIES TO WRITE: Children write their own senses poem.

MATHS LINKS: Measuring each other's bodies, measuring teddy bear foot prints (as part of senses investigation).

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS)

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 1 - Spring	Materials	Children will learn about everyday materials including wood, plastic, metal, water and rock. Children will learn to identify and name everyday materials and will have the opportunity to explore these materials. Children will build on their knowledge throughout this unit to sort objects by properties. Children will observe the season and describe the weather associated with the season and look at the length of the day. They will make comparisons between this season and the last. **Investigation:** • **Which material is best for building houses for the Three Little Pigs? How many hairdryers will it take to blow the house down?** • **Which material is stronger? 'What is the best material for the Three Little Pigs' jackets?**	• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering question

Top 5 facts

1. Know the names of different materials.
2. There is a difference between an object and the material from which it is made.
3. Materials have different properties.

4. Materials can be grouped together based on their properties.
5. We can perform simple tests to decide why one material might be better than another for a particular purpose.

KEY VOCABULARY: materials reversible irreversible solution metals wood plastic substance glass brick rock paper cardboard permanent

ENGLISH LINKS OPPORTUNITIES TO WRITE: Listening to the story and writing a character description of the wolf from 'The Three Little Pigs.'

MATHS LINKS: How many hairdryers does it take to blow down the houses of the Three Little Pigs?

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 1 Summer	Plants	Children will learn about the structure of plants and trees and what they need to grow. Children will engage in a variety of activities including common plants and trees in the garden and in the wild, sorting deciduous and evergreen leaves. In an early lesson, each child will plant a bean plant and observe it closely over the weeks by measuring and recording its growth. Children will observe the season and describe the weather associated with the season and look at the length of the day. They will make comparisons between this and the other seasons. **Investigation: Do all plants need soil to grow?** **Children grown beans with soil in clear plastic cups. They also grow cress on cotton wool to make cress sheep.** Trip: Northumberland Park – identification of flowers	• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering question

Top 5 facts

1. Know what is needed to plant a bean/seed.

2. Plants need water, soil and sunlight in order to grow.
3. Plants have different parts – leaves, stem, roots, petals etc.
4. Trees have different parts – trunk, branches, leaves, roots, bark etc.
5. There are two main types of trees – evergreen and deciduous.

KEY VOCABULARY: flowering plants roots stem leaves flowers air light water trunk seed leaves branches

ENGLISH LINKS OPPORTUNITIES TO WRITE: Writing about the life cycle of a seed.

MATHS LINKS: Measuring the height of the beans that we have grown.

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 2 - autumn	Animals including Humans	Growing and changing, health and hygiene. Animal habitats Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, shelter, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene Investigation: Tired Muscle Experiment Can you put your arm in the air and open and close your hand, while someone times you? How many seconds could you do it for? How did it feel at the start? How did it feel after your arm was in the air for a while? How did it feel when your arm was back down?	• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering question

Top 5 facts
1. Know that humans and animals have babies and name animal babies.

2. Recognise what humans can do at different stages of development and compare this with that of animals.
3. Name the things animals need to survive and flourish.
4. Name the things humans need to survive and flourish.
5. Know main food groups and how much of each food type humans need to keep healthy.

KEY VOCABULARY: Protein heart fats stomach healthy lungs water vitamins minerals carbohydrates water nutrition protection brain oxygen

ENGLISH LINKS OPPORTUNITIES TO WRITE:

MATHS LINKS:

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 2 – Spring	Materials	Identifying and comparing materials. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Investigation: **Exp 1 Heating and Cooling Food Materials** **What Happens to Materials when they are Heated?** **Exp 2 How can we change Materials?**	• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering question

TOP 5 facts
1. Be able to name a number of materials.

2. Be able to differentiate between natural and man-made materials and state their origins.
3. Know what materials are best used for and why.
4. Know how materials can be changed.
5. Know how animals get their food from plants.

KEY VOCABULARY: materials reversible irreversible solution metals wood plastic substance glass brick rock paper cardboard permanent

ENGLISH LINKS OPPORTUNITIES TO WRITE:

MATHS LINKS:

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 2 –	Plants Summer	Plants; seeds, growth and lifecycles. Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Allotment Visit Investigation **EXP; What happens to plants in dark areas?** **Plants which are not watered?**	• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering question
TOP 5 facts			

1. Be able to name a number of animals and their habitats and state why those habitats are different ie to meet the needs of different animals in different climates.
2. Be able to name a number of plants and their habitats and state why those habitats are different.
3. Know what plants need to grow and flourish.
4. Be able to say why and how animals and plants depend on each other.
5. Be able to describe the food chain.

KEY VOCABULARY: flowering plants roots stem leaves flowers air light water nutrients pollination seed temperature germination

ENGLISH LINKS OPPORTUNITIES TO WRITE:

MATHS LINKS:

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 3 – autumn -	Animals including Humans	Children will learn about the food groups and how to plan a healthy meal to support a healthy diet. We will discuss human skeleton, muscles and internal organs. We will compare and contrast this knowledge with regards to animals. Children will have a workshop with the Teddy Bear hospital to learn about how to keep their teeth and bodies healthy. Children will also have MatchFit from Newcastle United which will support teaching on diet and exercise. **Visitors:** • Match Fit Teddy Bear Hospital	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

		• I can explain how living things obtain the right type of food and nutrients. • I can compare and group animals by their diet. • I can sort animals based on their skeletons. • I can identify and name bones. • I can identify and explain the three main functions of a skeleton. • I can investigate why we need muscles to move. **<u>Investigation</u>** **<u>Looking at the effect of exercise on pulse rates.</u>**	• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.

Top 5 facts

1. Animals and humans need a balanced diet and exercise to stay healthy.
2. There are five main food groups; fruit and vegetables, protein, carbohydrates dairy products and fats.
3. Different animals need different amount of food depending on how big they are.
4. Different humans need different amount of food depending on their age and how much exercise they do. Eg we look at how much food an athlete eats.
5. It is important to eat a balanced diet with appropriate amounts of food from all food groups.

KEY VOCABULARY: endoskeleton, exoskeleton, hystrostatic, investigate, evaluate, conclusion, summarise, hypothesis, method, fruit and vegetables, protein, carbohydrates, fats and oils, dairy products.

ENGLISH LINKS OPPORTUNITIES TO WRITE: What would happen if I didn't have a skeleton?

ENGLISH LINKS OPPORTUNITIES TO ORALLY PRESENT: Presentation of bones in the body.

MATHS LINKS:

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

Year 2 - Teddy Bear Hospital/ Animals including humans
Year 1 – Animals including humans/ parts of the human body.

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 3 – Spring	Forces and Magnets	In the first half term children will investigate basic forces such as pushes and pulls and begin to apply their scientific knowledge to gain an awareness of friction and gravity. In the second half term children will study magnets. They will investigate north and south poles and think about laws of attraction and repelling. Children will begin to think about how a compass works. Children will have a workshop with Technology Tom where they will make a magnet catch the fish game. **Investigations:** • Magnet strength experiment. • I can identify the forces acting on objects. • I can investigate the effects of friction on different surfaces. • I can interpret and present data using bar charts. • Open question writing, which surface would be best to make a drive out of? • I can sort magnetic and non-magnetic materials. • I can investigate the strength of magnets INVESTIGATION. • I can explore magnetic poles. • I can explain that magnets attract some materials.	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

			• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.

Top 5 facts - Forces

1. Forces are either pushes or pulls.
2. Gravity is the force which keeps objects pulled down to earth.
3. Friction is the force which happens when objects rub together.
4. Friction can slow an object down.
5. Gravity is increased when an object falls from a greater height.

Top 5 facts – Magnets

1. Magnets either attract or repel each other.
2. Magnets have a North and South pole.
3. Magnets are used in many household items and toys.
4. Different magnets can have different amount of strength.
5. Magnets can lose their magnetism if not stored properly.

KEY VOCABULARY: investigate, evaluate, conclusion, summarise, hypothesis, method, magnetic force, pole attraction, gravity, friction,

ENGLISH LINKS OPPORTUNITIES TO WRITE: Experiment write up into magnet strength, Experiment write up into effects of gravity and friction, Which surface should a cover a drive way with?
ENGLISH LINKS OPPORTUNITIES TO ORALLY PRESENT: Children will orally present their conclusions from investigations.

MATHS LINKS: place value and number for experiments, handling data, measurement using a ruler for experiments regarding height of a ramp for gravitational pull.

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 3 – Spring	Rocks and soils	Children will study the three different classes of rocks: metamorphic, sedimentary and igneous. Children will classify types of rock from our classroom rock museum. We will have opportunity for a workshop at the Great Museum of the North. Children will also study the figure of Mary Anning and discuss fossils. **Investigations:** • Testing how hard different types of rocks are. • I can compare different types of rocks. • I can make careful, scientific observations of rocks. • I can set up a simple practical enquiry into the hardness of rocks. • I can interpret and present data using bar charts. • **Open question writing, which rock would be best to build a house with?** • I can explain how fossils are formed. • I can investigate facts about Mary Anning. • I can recall facts about rocks.	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

			• identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.

Top 5 facts

1. To know there are three types of rocks.
2. Sedimentary rocks are formed with layers.
3. Igneous rocks are formed from lava and volcanoes.
4. Metamorphic rocks can change shape while they are forming.
5. You can test the strength of rocks.

KEY VOCABULARY: investigate, evaluate, conclusion, summarise, hypothesis, method, sedimentary, igneous, metamorphic, strength, rough, smooth, coarse, strong, brittle.

ENGLISH LINKS OPPORTUNITIES TO WRITE: Which rock should I build a house out of?
ENGLISH LINKS OPPORTUNITIES TO ORALLY PRESENT: Children will orally present their conclusions from investigations.

MATHS LINKS: place value and number for experiments, handling data

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:
Year 1 – Materials.
Year 2 – Materials.

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 3 Summer	Plants	Children will learn about the different parts of a plant as part of consolidating Year 2 work.	• asking relevant questions and using different types of scientific enquiries to answer them

		Also more in-depth look at plant reproduction, introducing stigma and stamen. Children will discuss pollination and think about how to help a healthy plant grow. **Investigations:** • Growing sweetpeas investigation. Introduce temperature variable to Year 2 investigation. • Look at how coloured water affects a plant's growth.	• setting up simple practical enquiries, comparative and fair tests • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • using straightforward scientific evidence to answer questions or to support their findings.

Top 5 facts

1. To be able to name some parts of flowering plants and explain their jobs.
2. To understand and order the stages of the life cycle of a flowering plant.
3. To understand the plants need water, sunlight and warmth to survive.
4. To understand the pollination is how plants reproduce.
5. To understand that because plants need sunlight and warmth, flowers grow better in spring and summer.

KEY VOCABULARY: stem, flower, petal, sun, water, warmth, sunlight, photosynthesis, growth, seed, seedling.

ENGLISH LINKS OPPORTUNITIES TO WRITE: Experiment write up
ENGLISH LINKS OPPORTUNITIES TO ORALLY PRESENT: Children will orally present their conclusions from investigations.

MATHS LINKS: place value and number for experiments, handling data

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:
Year 1 - Plants
Year 1 –Seasons throughout the year.
Year 2 – Plants, planting sunflowers

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 3 summer	Light	Children will discuss the differences between light and dark and think about dark as being an absence of light. We will investigate different natural and man-made light sources. Children will investigate reflective surfaces and think about how mirrors work. Children will learn how to keep themselves safe in the sun, learning about the sun's harmful UV rays. **Investigations:** • An investigation to find out the most reflective surface.	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.

Top 5 facts

1. To understand that darkness is the absence of light.
2. To understand how a reflection is created.
3. To understand that exposure to the sun can be harmful.
4. To know ways to protect myself from the sun eg wearing sunglasses, suncream etc.
5. To understand that a shadow is created when light is blocked by a solid object.

KEY VOCABULARY: light, dark, opaque, translucent, transparent, mirror, reflection.

ENGLISH LINKS OPPORTUNITIES TO WRITE: Experiment write up
ENGLISH LINKS OPPORTUNITIES TO ORALLY PRESENT: Children will orally present their conclusions from investigations.

MATHS LINKS: place value and number for experiments, handling data,

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:
Year 1 –Seasons throughout the year.

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 4 - autumn	Living things and their habitats	Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Recognise that environments can change and that this can sometimes pose dangers to living things. 1. To recognise that living things can be grouped in a variety of ways. 2. To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. 3. To recognise that environments can change. 4. To recognise that a change to an environment can pose dangers to living things. **Investigation** Field trip around school grounds. Looking at living things in our local vicinity – focus on invertebrate animals.	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

			• identifying differences, similarities or changes related to simple scientific ideas and processes

Top 5 facts

1. **Habitats are where living things live.**
2. **Humans and Cows are mammals.**
3. **Sharks and goldfish are fish.**
4. **A classification key is used to identify animals.**
5. **Deforestation in rainforests harms flora and fauna**

KEY VOCABULARY: mammal, amphibian, insect, bird, reproduction, rainforest, ocean, environment, vertebrate, invertebrate habitats

ENGLISH LINKS OPPORTUNITIES TO WRITE:

- Habitat fact file
- Descriptions of different habitats using powerful, descriptive language (contrasting habitats)
- Debate – Should a forest be closed to build houses and to fill the demand for commercial products such as paper?

MATHS LINKS:
Creating a bar chart to display the invertebrate hunt data. Children can then create question for their bar chart.

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:
Children investigate this topic in Year 5 (in greater depth).

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 4 spring	States of Matter	Compare and group materials together, according to whether they are solids, liquids or gases Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)	• asking relevant questions and using different types of scientific enquiries to answer them • making systematic and careful observations and, where appropriate, taking accurate measurements using

		Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 1. I can compare and group materials together, according to whether they are solids, liquids or gases. 2. I can observe that some materials change state when they are heated or cooled, and research the temperature at which this happens. 3. I can identify the part played by evaporation in the water cycle and associate the rate of evaporation with temperature. 4. I can identify the part played by condensation in the water cycle. **Investigation** Look at how gases are dispersed. Measuring rates at which ice melts.	standard units, using a range of equipment, including thermometers and data loggers • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.

Top 5 facts

1. **The 3 states of matter are solid, liquid and gas.**
2. **Matter is made up of particles. The arrangement of particles determines the state of matter.**
3. **Changes of energy change the state of matter**
4. **'Evaporation' is when liquid water turns to water vapour.**

'Condensation' is when water vapour turns to liquid water.

KEY VOCABULARY: materials temperature reversible irreversible plastic substance transparency condensation cooled dissolve solid liquid gas evaporating permanent

ENGLISH LINKS OPPORTUNITIES TO WRITE:

- Investigation into gases and their properties.

- Explanation of the water cycle.

MATHS LINKS: Measuring rates at which ice melts.

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

Can use their knowledge of the properties of solids, liquids and gases to work out how sound travels.

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 4 Spring	Animals including humans	Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey. 1. I can describe the simple functions of the basic parts of the digestive system in humans. 2. I can identify the different types of teeth in humans and their simple functions. 3. I can construct and interpret a variety of food chains. 4. I can identify producers, predators and prey. **Investigation** The effect of different liquids on teeth enamel – using boiled eggs in solutions.	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.

Top 5 facts

1. The digestive system is how the body breaks food down into nutrients and waste.
2. Canines and molars are types of human teeth.
3. Teeth are kept healthy through regular brushing with toothpaste and avoiding sugary foods.
4. The stomach is the organ in the digestive system where food is broken down through churning.
5. A predator is something that eats prey – a domestic cat is a predator of birds.

KEY VOCABULARY: molars incisors canines oesophagus small intestine anus large intestine colon mouth bladder stomach producers predators prey

ENGLISH LINKS OPPORTUNITIES TO WRITE:

- To investigate teeth and how they have different functions.
- Investigate the effects of tooth decay.

MATHS LINKS:

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: Y5 & 6 Animals Including Humans

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 4 Summer	Sound	Identify how sounds are made, associating some of them with something vibrating Recognise that vibrations from sounds travel through a medium to the ear Find patterns between the pitch of a sound and features of the object that produced it	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests

		Find patterns between the volume of a sound and the strength of the vibrations that produced it Recognise that sounds get fainter as the distance from the sound source increases. 1. I can identify how sounds are made by associating some of them with something vibrating. 2. I understand that vibrations from sounds travel through the air or other medium to the ear. 3. I can find patterns between the pitch of a sound and how it was produced. 4. I can find patterns between the volume of a sound and the strength of the vibrations that made it. 5. I recognise that sounds get fainter as the distance from the sound source increases. Experiment – How tin can string phones work and how distance affects them.	• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Top 5 facts

1. S**ounds are made by vibrations which travel through solids, liquids and gases,**
2. We hear by the ear transmitting sound to our brains.
3. Pitch is whether a sound is high or low.
4. Volume is whether a sound is loud or soft.
5. The closer a sound is, the louder it seems.

KEY VOCABULARY: vibrations sound patterns pitched increase decrease vibrating medium pitch volume faint fainter air

ENGLISH LINKS OPPORTUNITIES TO WRITE:

- Explanation of how sound travels

- Write a set of instructions to make instrument – using imperative verbs and adverbs
- Write up investigation into which materials make the best insulators (noise cancelling).

MATHS LINKS:

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: recap during Music lessons every half term.

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 4 – Summer	Electricity	Identify common appliances that run on electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators, and associate metals with being good conductors. 1. I can identify common appliances that run on electricity. 2. I can make simple electrical circuits, naming its basic parts, including cells, wires, bulbs, switches and buzzers. 3. I can identify whether or not a lamp will light in a simple circuit. 4. I recognise that a switch opens and closes a circuit and understand whether or not a lamp lights in a simple series circuit. 5. I recognise some common conductors and insulators, and know metals are good conductors **Investigation** Recognise some common conductors and insulators, and know metals are good conductors.	• different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes
Top 5 things			

1**. Kitchen appliances, TVs and X-boxes run on mains electricity, mobile phones work on batteries.**
2. Electricity travels round circuits.
3. All lights in school and at home are on different circuits.
4. A switch opens and closes a circuit.
5. Copper is a good conductor.

KEY VOCABULARY: conductor insulator battery cell lamp switch circuit component buzzer motor voltage function brightness volume symbols wire series parallel plastic metal

ENGLISH LINKS OPPORTUNITIES TO WRITE: Letter to younger children explaining why you shouldn't use a metal knife to get bread out of the toaster. Explain whys it's dangerous and give a safe alternative.

MATHS LINKS:

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: Linked with DT (Electric torches) – Year 6 develop using correct keys for electrical circuits.

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 5 Au 1	Earth and Space	• Describe the movement of the Earth and other planets relative to the sun in the solar system. • Describe the movement of the moon relative to the Earth. • Describe the sun, Earth and moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. 1. Earth, Sun & Moon – locate the earth, sun and moon in a diagram of the solar system.	• answer them • setting up simple practical enquiries, comparative and fair tests • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

		2. Orbit – explain how the earth, sun and moon move relative to one another. X 2 3. Solar Eclipses – understand why solar eclipses occur. 4. Day &Night – Why do we have day and night? **Investigation** Do night and day occur at different times around the world?	• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes
Top 5 facts 1. The Sun, Earth and Moon are spherical bodies. 2. There are eight planets in the Solar System (e.g. Jupiter and Saturn). 3. The planets orbit around the Sun (the orbits are heliocentric). 4. The Earth rotates on its own axis, causing night and day. 5. The moon orbits around the Earth. Gravity keeps the moon in orbit with the Earth.			
KEY VOCABULARY: Earth, Mars, Sun, Moon, orbit, rotates, axis, spherical, planets, solar system, solar eclipses. ENGLISH LINKS OPPORTUNITIES TO WRITE: Information text about the planets MATHS LINKS: Distances from the sun/ length of days/years/ tilt of the Earth's axis OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: Y1 Seasonal Changes			
YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 5 – Au 2	Forces	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.	• setting up simple practical enquiries, comparative and fair tests

		• Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. 1. Gravity – anti-gravity bottle; the forces acting upon it & whether they are balanced or unbalanced. 2. Air Resistance – Parachute investigation: create a question to investigate. 3. Water Resistance – Does shape affect whether objects float or sink? 4. Friction – How much can you reduce friction when dragging a block of wood? 5. Levers, Pulleys & Gears – What is the smallest weight you can lift your rubber with using a lever?	• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes
Top 5 facts 1. Gravity is a force that makes things fall to the ground on Earth and other planets. 2. Air resistance is a force that acts between air and an object. 3. Water resistance is a force that acts between a fluid and an object and upthrust pushes an object up in fluids (and in air). 4. Friction is a force that acts between two surfaces that are sliding, or trying to slide, across each other. · 5. Levers consist of two parts – a beam and pivot. A load is added to the beam, supported by the pivot, and a heavy load can be lifted.			
KEY VOCABULARY: objects, force, gravity, air resistance, water resistance, friction, levers, pulleys, gears, observing, exploring. ENGLISH LINKS OPPORTUNITIES TO WRITE: Scientific investigation write up MATHS LINKS: What is the smallest weight used to lift a lever? OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: Y3 Forces & Magnets			
YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**

Year 5 – Sp 1	Living Things and their Habitats	• Understand the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. 1. Categorising Animals – identify the main features of the 6 categories & identify animals within group. 2. Life Cycle of a Mammal - order the stages of a rabbits life cycle. 3. Life Cycle of Bird – create an example of the life cycle of a bird. 4. Comparing Life Cycles – compare the life cycles of a frog and a butterfly.	• asking relevant questions and using different types of scientific enquiries to answer them • using straightforward scientific evidence to answer questions or to support their findings.
Top 5 facts 1. There are six different ways to classify animals: mammals, reptiles, birds, amphibians, fish and insects. 2. Mammals begin their lives as an embryo. They are born and looked after by their mother, who feeds them milk so they can grow and develop. 3. Reptiles have scales and dry skin. 4. Birds start out as a fertilised egg. They hatch and grow feathers on their wings. 5. Amphibians have moist skin and webbed feet.			
KEY VOCABULARY: mammal, amphibian, insect, bird, reproduction, similarities, differences, habitats. ENGLISH LINKS OPPORTUNITIES TO WRITE: Report classifying animals MATHS LINKS: Positive and negative temperatures OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: Animals including humans Y1 – Y4			
YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 5 – Sp 2	Plants	• Describe the life cycle of plants. • Explain the pollination process for some plants. • Describe the life process of reproduction in some plants and animals 1. Life Cycles – understand the life cycle of flowering and non-flowering plants.	• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

		2. Sexual Reproduction – dissect a lily & identify the male and female parts. 3. Pollination – explanation text of each stage of the pollination process. 4. Seed Dispersal – understand how plants disperse their seeds. 5. Asexual Reproduction – understand and identify plants that use asexual reproduction.	• reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments

Top 5 facts

1. Plants begin as a seed; with water the seed grows a shoot, this is called germination.
2. Roots emerge and soak up nutrients, allowing the shoot to push towards the sunlight.
3. Leaves form, soak up sunlight and carbon dioxide, which creates food for the plant through photosynthesis.
4. Flowers start to grow and pollen in flowers is used to make seeds through pollination. Pollen is made by the male part of the plant, which is called the stamen. The pollen needs to get to the stigma on the female part of the plant, which is called the carpel. This process is called sexual reproduction.
5. Seeds spread out so they can grow; they can disperse in a number of different ways: wind, explosions, shakers, water, attaching to animals, eaten by animals and drop and roll.

KEY VOCABULARY: life cycle, germination, roots, shoots, leaves, flowers, pollination, pollen, stamen, anther, filament, carpel, stigma, style, ovary, ovules, dissect, seed dispersal, sexual reproduction, male, female, asexual reproduction

ENGLISH LINKS OPPORTUNITIES TO WRITE: The story of pollination

MATHS LINKS: Measuring the parts of a flower

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: Plants Y1-3

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE**	**KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 5 – Su1	Properties and Changes of Materials	• Compare & group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity & response to magnets.		• planning different types of scientific enquiries to answer questions, including recognising

		• Know that some materials will dissolve in liquid to form a solution, & describe how to recover a substance from a solution. • Use knowledge of solids, liquids & gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Demonstrate that dissolving, mixing & changes of state are reversible changes. • Explain that some changes result in the formation of new materials, & that this kind of change is not usually reversible, including changes associated with burning & the action of acid on bicarbonate of soda.	and controlling variables where necessary • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments
Top 5 facts 1. Any substance that is used to make something is a material. The words used to describe a material are known as its properties. 2. Thermal conductors will let heat through and make the food warm up quickly. 3. Thermal insulators will stop the heat getting through and keep the food cool for longer. 4. In dissolving, the solid mixes into the liquid to make a new liquid, called a solution. Materials that will dissolve are known as soluble. 5. A suspension is a mixture of liquid and solid particles that will not dissolve. Materials that won't dissolve are insoluble.			
KEY VOCABULARY: materials, conductors, reversible, irreversible, solution, metals, wood, plastic, substance, transparency, translucent, opaque, conductivity, magnetism, permeable, flexibility, hardness, dissolve, filtering, sieving, evaporating, permanent, solution, soluble, insoluble, mixture			

ENGLISH LINKS OPPORTUNITIES TO WRITE: Write up of the lunch box investigation

MATHS LINKS: Measuring temperature and recording in tables and graphs

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: Y2 Materials, Y3 Forces and Magnets, Y4 States of Matter

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 5 – Su2	Animals including Humans	• Understand that the human life cycle has stages. • Describe the changes as humans develop to old age. • Understand the changes that occur with the length and mass of a baby as it grows. Present data. • Investigate the gestation periods of other animals and comparing them with humans. • Explain the changes experienced in puberty. • Identify the changes that take place in old age.	• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • Identifying scientific evidence that has been used to support or refute ideas or arguments

Top 5 facts

1. There are a number of stages of physical human growth and development: prenatal, infancy, childhood, adolescence, adulthood and old age.
2. A number of factors can influence how babies growth and develop including: variability, diet, quality of care, genetics and illness.
3. Gestation is defined as the time between conception and birth.
4. Puberty is the stage of development between childhood and adulthood.
5. As we reach old age, a number of changes take place in our bodies. Older people can stay healthy by exercising and learn new skills.

KEY VOCABULARY: fetus, baby, toddler, child, teenager, adult, old age, development, growth, human, infancy, childhood, adulthood, adolescence, prenatal, data, tables, line graphs, present, findings, information, height, mass, gestation, growth, animals, puberty, changes, breasts, pubic hair, hips, facial hair, body hair, genitals, muscular development, menstruation,

ENGLISH LINKS OPPORTUNITIES TO WRITE: Oral presentation

MATHS LINKS: Creating line graphs and presenting data

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: Y1 – Y4 Animals, including humans

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE** **KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 6 – autumn	Animals including humans	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans. **Investigations:** • Testing how much air is inside our lungs.	• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results,

			in oral and written forms such as displays and other presentations

Five important facts

1. The heart uses 4 chambers pumps blood to the lungs to get oxygen and out of the lungs to share oxygen with the rest of the body.
2. The lungs take air from the trachea (windpipe) and heads down a series of splitting pipes until they reach tiny air sacs.
3. Lifestyle choices such as smoking, drugs and unhealthy eating can damage the body and cause diseases such as cancer or heart attacks.
4. Lifestyle changes such as exercise and healthy eating can reverse most problems and illnesses.
5. Water and nutrients are transported around the body in blood cells.

KEY VOCABULARY: Circulatory system heart blood vessel veins capillaries lungs oxygenated de-oxygenated respiration pulse ventricle aorta atrium arteries oxygen carbon dioxide heart lungs blood pulse

ENGLISH LINKS OPPORTUNITIES TO WRITE: Letter to someone explaining why they should give up smoking.

MATHS LINKS: Graph of experiment results into lung capacity.

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	TOPIC	KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION	SKILLS ACQUISITION
Year 6 – autumn	Electricity	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram. **Investigations:** • Test the brightness of lightbulbs and how this changes when variables change such as length of wire.	• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels,

			classification keys, tables, scatter graphs, bar and line graphs

Five important facts

1. Identify and use electrical symbols in a circuit.
2. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery or a switch is open/closed.
3. Understand buzzers will get louder and bulbs brighter if more cells are added to a circuit.
4. Recognise some common conductors and insulators, and associate metals with being good conductors
5. Learn that local scientist Joseph Swan invented the electric lightbulb.

KEY VOCABULARY: Conductor insulator battery cell lamp switch circuit component buzzer motor voltage function brightness volume symbols wire graphite series parallel plastic metal

ENGLISH LINKS OPPORTUNITIES TO WRITE: Biography of Joseph Swan.

MATHS LINKS: Tables regarding experiment into effectiveness of conductor wire with varying lengths on brightness of a bulb.

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	TOPIC	KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION	SKILLS ACQUISITION
Year 6 – spring	Living things and their habitats	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.	• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

		Investigations: • Yeast growth test.	• using test results to make predictions to set up further comparative and fair tests

Five important facts

1. The Linnaeus system is used to organise plants and animals my scientists.
2. Animals can be grouped into mammals, reptiles, birds, fish and amphibians by looking at their characteristics.
3. fungi, virus and bacteria are living things can not be seen with the naked eye.
4. Some bacteria do helpful jobs such as digest food in the stomach and break down plant matter.
5. We need to make sure virus do not spread through being hygienic.

KEY VOCABULARY: Mammal reptile amphibians habitat micro-organism adapt adaptation characteristics classify fungi virus bacteria movement respiration reproduction growth nutrition excretion sensitivity vertebrate invertebrates species kingdoms

ENGLISH LINKS OPPORTUNITIES TO WRITE: In-depth experiment into Yeast's favourite habitat. Guide to best-practice in the kitchen in terms of micro-organism safety.

MATHS LINKS: Reading scales and measuring as part of experiment.

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**
Year 6 – summer	Evolution	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

		Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **Investigation** Fair test – Effect of camouflage on predation (coloured counters on coloured mat. Number/colour picked up in 15 seconds). Repeat for different colour mat. Compare data. Develop concept of 'natural selection' / evolution.	• using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations

Five important facts

1. Living things have changed over time and fossils provide information about living things that inhabited the Earth millions of years ago.
2. Living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
3. Animals and plants are adapted to best survive their environment in different ways.
4. If the environment changes quickly some animals or plants will die out.
5. Charles Darwin came up with the Theory of Evolution (Survival of the Fittest) after travelling the world and studying different species very closely.

KEY VOCABULARY: Natural selection characteristics evidence fossils parent offspring inherit inherited characteristic environmental characteristic adapt adaptation evolve

ENGLISH LINKS OPPORTUNITIES TO WRITE: Fictional account of invented animal.

MATHS LINKS: Data collection and timings.

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS:

YR GROUP / TERM	**TOPIC**	**KEY CONTENT / LESSON SEQUENCE KNOWLEDGE ACQUISITION**	**SKILLS ACQUISITION**

Year 6 – summer	Light	Recognise that light appears to travel 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 into the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **Investigation** Does the size of shadow change by changing the distance of an object and the torch (fixed). Change distance between object (fixed) and screen (moving).	• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Five important facts

1. Light can only travel in straight lines and shadows prove this.
2. Einstein discovered that nothing can travel faster than the speed of light.
3. Refraction is caused because light waves travel at a different speed when they go through other transparent materials, such as water or glass. (straw in water experiment).
4. Isaac Newton discovered that white light is made up of all the colours of the spectrum. (Rainbows are best example of this)
5. Shadows are formed when an opaque object blocks a ray of light and can change size depending on the distance of the light source.

KEY VOCABULARY: Reflect reflection shadow light ray transmit opaque transparent translucent emit absorb dispersion prism pupil retina iris optic nerve lens image cornea refraction mirror convex concave

ENGLISH LINKS OPPORTUNITIES TO WRITE: You-tube script explaining to Year 3 about light on its basic principles.

MATHS LINKS: 3d shapes (prisms) impact on light

OPPORTUNITIES FOR RECAP (HOW WE ARE EMBEDDING SKILLS / KNOWLEDGE / VOCAB FROM PREVIOUS TOPICS / YEAR GROUPS: