SCIENCE Curriculum – What will the children actually learn?

Key Threshold Concepts (Substantive Knowledge)

When constructing our curriculum, we considered key threshold concepts or "the big ideas" which shape the ways pupils think within each subject. These threshold concepts, also known as "substantive knowledge," are explored in every year group which help pupils gradually increase their understanding of them. Over time this approach of revisiting concepts helps children to *know more and remember more.* In our Science lessons children are taught the key threshold concepts (substantive knowledge) below:

Working Scientifically	**Biology**	**Chemistry**	**Physics**
This concept involves learning the methodologies of the discipline of science.	Children will develop scientific knowledge and conceptual understanding through the study of biology.	Children will develop scientific knowledge and conceptual understanding through the study of chemistry.	Children will develop scientific knowledge and conceptual understanding through the study of physics.

The key threshold concepts for each class are set out in our three learning Milestones. Milestone 1 (Years 1 & 2), Milestone 2 (Years 3 & 4) and Milestone 3 (Year 5 & 6). These can be seen below alongside the topics that are to be taught in each class.

Topic Specific Milestones

In addition to the key threshold Milestones our curriculum sets out progression in the form of topic specific 'Milestones' for every topic taught. Each Milestone contains a range of descriptors which provide details of the skills, within each topic, to be covered and taught in class. KS1 children work to achieve the objectives set out in Milestone 1. Lower KS2 children work to achieve the objectives set out in Milestone 2 and upper Key Stage 2 children work to achieve the objectives set out in Milestone 3.

Vocabulary:

Research has shown that pupils with the most extensive vocabulary have:

- better reasoning, inference and pragmatic skills
- academic success and employment
- better mental health in adulthood.

Each milestone introduces a range of age appropriate science vocabulary that the teacher will teach and revisit throughout the two-year period that the children are working on these milestone targets. These are set out below. In addition to this, each topic assessment tracker (see below) contains vocabulary that is specific to the individual topic.

Key Threshold Milestone 1 (Year 1 & 2)

– Assessment Tracker (print one copy of this page for each year group and tick/date the Milestone 1 targets when they are covered in class).

Class name: **Year groups:** **Academic year:**

Year groups	Work scientifically This concept involves learning the methodologies of the discipline of science.	Biology		Chemistry		Physics	
1 & 2 Milestone 1	• Ask simple questions. • Observe closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.	**Understand plants** This concept involves becoming familiar with different types of plants, their structure and reproduction.	• Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers. • 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.	**Investigate materials** This concept involves becoming familiar with a range of materials, their properties, uses and how they may be altered or changed.	• Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Find out how the shapes of solid objects made from	**Understand movement, forces and magnets** This concept involves understanding what causes motion.	• Notice and describe how things move, using simple comparisons such as faster and slower. • Compare how different things move.
						Understand light and seeing This concept involves understanding how light and reflection affect sight.	• Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes.
		Understand animals and humans This concept involves becoming familiar with different types of animals, humans and the life processes they share.	• Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (birds, fish, amphibians,			**Investigate sound and hearing** This concept involves understanding how sound is produced, how it travels and how it is heard.	• Observe and name a variety of sources of sound, noticing that we hear with our ears.

			reptiles, mammals and invertebrates, including pets). • Identify name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. • Notice that animals, including humans, have offspring which grow into adults. • Investigate and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.		some materials can be changed by squashing, bending, twisting and stretching. • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.	**Understand electrical circuits** This concept involves understanding circuits and their role in electrical applications.	• Identify common appliances that run on electricity. • Construct a simple series electrical circuit.
		Investigate living things This concept involves becoming familiar with a wider range of living things, including insects and understanding life processes.	• Explore and compare the differences between things that are living, that are dead and that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including micro-habitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.			**Understand the Earth's movement in space** This concept involves understanding what causes seasonal changes, day and night.	• Observe the apparent movement of the Sun during the day. • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.
		Understand evolution and inheritance This concept involves understanding that organisms come into existence, adapt, change and evolve and become extinct.	• Identify how humans resemble their parents in many features.				

TOPICS TAUGHT in KS1:

In addition to the specific skills that the children will keep revisiting through the key concepts or substantive knowledge there will be specific learning related to individual topics. At Stapleford Primary School children are taught in mixed age classes e.g. Years 1 & 2 together etc. As a result, we have a two-year topic plan to prevent the children repeating subject matter. More detail is shown below as to what will be taught within each topic.

KS1 (Class 3 – Years 1 & 2) Rolling Programme

Subject	**Year A** (2022-2023), (2024-2025) (2026-2027) etc.			**Year B** (2021-2022), (2023-2024), (2025-2026) etc.		
	Autumn Term	Spring Term	Summer Term	Autumn Term	Spring Term	Summer Term
Science (See Hamilton Trust scheme of work)	AMAZING ME Y1 ***Animals including humans*** and Y2 ***Animals including humans***: focus on our bodies and health WILD WEATHER Y1 ***Seasonal changes***	BRILLIANT BUILDERS Y1 ***Everyday materials*** and Y2 ***Uses of everyday materials***: focus on uses of materials including building GROWING THINGS Y1 and Y2 ***Plants***: focus on needs of plants and growth	WILD AND WONDERFUL CREATURES Y1 ***Animals including humans*** and Y2 ***Animals including humans:*** focus on wild animals/fish. FOOD CHAINS Y2 ***Living things and their habitats***: focus on food chains	PEOPLE AND THEIR PETS Y1 ***Animals including humans*** and Y2 ***Animals including humans***: focus on pets WEATHER ART Y1 ***Seasonal changes***	BRILLIANT BUILDERS Y1 ***Everyday materials*** and Y2 **Uses of everyday materials:** focus on comparing materials ART AND NATURE Y1 and Y2 ***Plants***: focus on parts of flowering plants and trees	EXPLORING CHANGES Y1 ***Everyday materials*** and Y2 ***Uses of everyday materials:*** focus on change HABITATS AND HOMES Y2 ***Living things and their habitats***: focus on habitats

Milestone 1: Vocabulary (words to revisit throughout the two-years that the children study Milestone 1).

Animals Including Humans - Amazing Me!
compare, describe, similar, different, notice patterns, measure, record, predict, gather, centimetre, millimetre, ears, senses, hearing, touch, sight, smell, taste, hear, fruit, vegetables, bread, rice, potatoes, pasta, milk, dairy, food high in fat/sugar, meat, fish, egg, beans

Seasonal Changes - Wild Weather
rain, snow, storm, thunder, lightning, cloudy, clothing, warm, cold, forecast, summer, autumn, winter, spring, seasons, day, night, shadow length, change, light, dark, weather, rainfall, precipitation, data, wind, direction, gauge, patterns

Everyday Materials - Brilliant Builders!
Rough/smooth, flat/bumpy, sharp/blunt, wood, metal, plastic, glass, rock, materials, properties, magnetic, non-magnetic, useful

Plants - Growing Things
plant, leaf, grow, weed, change, living, water, healthy, similar to, different from, potato, chitting, root, different, seeds, garden centre, warmth, light, dry, wet, moist, growth, germination, seed, seed coat, bean, nutrients, leaves, stem, roots, peat, soil, compost, growbag, manure, fertilizer

Animals Including Humans - Wild and Wonderful Creatures
Birds, fish, reptiles, mammals, invertebrates, group, classify, carnivores, herbivores, omnivores, basic needs, water, food, air, breathing, survival, habitats, offspring, babies, adults,

Living Things and Their Habitats - Food Chains
Food chain, predator, habitats, dependence, dead, alive, savannah, rainforest, tundra, micro-habitat, features, ocean, water, micro-habitat,

Animals Including Humans - People and their Pets
notice, patterns, behaviour, habitat, living things, damp, shady, dry, observations, prediction, happy, healthy, explore, investigate, observe, birds, fish, amphibians, reptiles, mammals, invertebrates, group, similarities, difference,

Seasonal Changes - Weather Art
rain, snow, storm, thunder, lightning, warm, cold, forecast, summer, autumn, winter, spring, seasons, wind, strength, direction, sun, light source, shadow, day, night, shadow length, change, light, dark

Everyday Materials - Brilliant Builders
Waterproof, absorbent, breaks/tears, materials, properties, absorbency, strong, weak, hypothesis

Plants - Art and Nature
plant, leaf, grow, weed, change, living, water, healthy, similar to, different from, useful, seed, bean, warmth, nutrients, leaves, stem, roots, grow, deciduous, evergreen, flower, trunk, bark, branch, shoot

Everyday Materials - Exploring Changes
Water, ice, melts, frozen, observe, materials, properties, absorbency, waterproof, strong, resist

Living Things and Their Habitats - Habitats and Homes
Growth, germination, planting, edible, mini-beasts, habitats, harvest, grow, allotment, produce, soil, wash, cook

The Assessment Tracker documents below outline what children will learn within each topic

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Animals Including Humans - Amazing Me!												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Compare similarities and differences between present and past photos												
Understand that we change over time												
Observe changes over time between the baby photos and current ones												
Name parts of their bodies												
Collect information about their bodies by observing, measuring and noticing patterns between hand and food size												
Consider a number of ways to present the data and their conclusions												
Understand that we hear sounds with our ears and that hearing is one of our senses												
Begin to understand that some factors affect the hearing of the whistle												
Understand that we use our senses to classify things into groups												
Classify foods using a Venn diagram												
Go outside to explore the school grounds using different senses. Explore what is it like when the sense of sight is taken away. Understand that often our senses work together to help us explore the world.												

Design a balanced lunch box as a reminder of how much food each food group is required												

Topic specific vocabulary: Animals Including Humans - Amazing Me!

compare	describe	similar	different	patterns	measure	record	predict
millimetre	ears	senses	hearing	touch	sight	smell	taste
vegetables	bread	rice	potatoes	pasta	dairy	milk	meat
beans	fish	sugar	hear	centimetre	egg	fruit	gather

Topic: Seasonal Changes - Wild Weather												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
show their understanding by suggesting how to dress a teddy or doll appropriately for different weather conditions												
look at weather forecasts and the symbols used by forecasters												
write phrases, using typical words used by weather forecasters												
learn about the weather for the season and consider if the weather they are expecting is typical.												
know what weather to expect in each of the seasons of the year.												
observe the weather outside and record in the classroom using symbols												
report on the weather they have observed and know how to measure the temperature												
make and set up rainfall gauges up in the playground. Predict how much rain will fall in the week. Record the results.												
make a wind sock to measure wind direction Record the direction of the wind and consider if it will change?												
observe wind direction over time and notice any patterns between rainfall and wind.												
measure the temperature inside and outside the classroom. Different? Why?												
make a thermometer box to use outside to measure temperature. Understand that air temperature changes with the seasons.												

Topic specific vocabulary: Seasonal Changes - Wild Weather

rain	snow	storm	thunder	lightning	cloudy	clothing	warm	cold
summer	autumn	winter	spring	seasons	forecast	night	shadow length	change
dark	weather	precipitation	data	wind	direction	gauge	patterns	light

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Everyday Materials - Brilliant Builders!												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Identify some of the materials in the classroom												
Appreciate the usefulness of some materials (tables made of wood and metal, not jelly)												
Understand the difference between an object and the material from which it is made												
Sort objects according to their properties, usefulness and other criteria												
Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock												
Explore a variety of different magnets and objects												
does everything made of metal stick to a magnet?												
Understand the properties of materials using terms such as: hard, soft, stretchy, stiff, bendy/floppy												
Explore, and understand the properties of the different materials the Little Pigs used												
Predict which material will be the most successful for the Little Pigs and why												
Understand why some pigs may not choose to use bricks (more expensive, heavier, harder work to build with etc.) and suggest successful alternatives based on previous learning												

Topic specific vocabulary: Everyday Materials - Brilliant Builders!

rough	smooth	flat	bumpy	sharp	blunt	wood	metal
rock	materials	properties	magnetic	non-magnetic	useful	plastic	glass

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Plants - Growing Things												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Identify and closely observe plants outside the school building												
Predict what plants will look like when they are fully grown												
Understand that there are different types of potato, plant them and predict outcomes												
Understand what needs to be done to keep the plants healthy												
Understand what a garden is and how varied they are												
Understand what a bean and seed need to be able to grow												
Predict the outcomes of the bean and seeds and set up a diary to record the growth over time												
Know that cress seeds need water and the right temperature to germinate and grow												
Predict, and begin to give reasons for, what will happen to the cress in the dark cupboard												
Understand what is involved in recording cress growth												
Understand that there are differences between the bean grown in the classroom and the ones grown in the cupboard												
Understand and explain why those differences have occurred												

Understand the various functions of the parts of the plant and their importance												
Observe the cress growth, talk about what the seed has produced and how the cress plant grew												
Understand the differences between the cress in the classroom and that left in the cupboard												

Topic specific vocabulary: Plants - Growing Things

plant	leaf	grow	weed	change	living	water	healthy	similar to
potato	chitting	root	different	seeds	warmth	light	dry	different from
wet	moist	growth	germination	seed	Seed coat	bean	nutrients	garden centre
stem	roots	leaves	peat	soil	compost	growbag	manure	fertilizer

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Animals Including Humans - Wild and Wonderful Creatures												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Identify a variety of common animals (birds, fish, amphibians, reptiles, mammals, invertebrates)												
Identify and discuss the characteristics of different animals												
Categorise them according to those features and characteristics												
Understand what they need to survive and what else they might need to be comfortable and happy												
Discuss why they need certain things for survival, including food and water												
Understand the basic needs and habitats of some wild animals												
Discuss and plan together a mini-habitat for a plastic animal												
Create a mini scene inside a plastic bottle, focusing on including predators, prey, places to hide and basic foods for the creatures included												
Understand that animals, including humans, have offspring which grow into adults												
Collate and discuss knowledge and information about a range of African animals												
Understand the dangers and warnings associated with wild animal safaris and be able to communicate this to others												

Topic specific vocabulary: Animals Including Humans - Wild and Wonderful Creatures

birds	fish	reptiles	mammals	invertebrates	group	classify	carnivores	herbivores	omnivores
basic needs	water	food	air	breathing	survival	habitats	offspring	babies	adults

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Living Things and Their Habitats - Food Chains												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Understand what is meant by a food chain												
Understand that living things need other living things to survive												
Observe parts of food chains in the school grounds and discuss what would happen in the rest of the food chain												
Understand the differences between things that are living, dead, and things that have never been alive												
Understand the key features of things that are living, as opposed to dead. Categorise specimens according to their features												
Understand that habitats can be small and local but also very extensive												
Understand that creatures are adapted for their own habitats												
Understand that food chains exist in watery habitats. Consider how creatures found in water are perfectly suited to their environment												
Understand that the sun's energy travels through a food chain and that this is called a 'transfer of energy'												

Topic specific vocabulary: Living Things and Their Habitats - Food Chains

food chain	predator	habitat	dependence	dead	alive	savannah	rainforest	tundra	micro-habitat

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Animals Including Humans - People and their Pets												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Carefully observe creatures in the school grounds, generate questions and notice patterns												
Annotate drawings of their observations with scientific questions and develop lines of enquiry												
Understand that there are special places (habitats) where mini-beasts (invertebrates) live												
Consider what conditions a woodlice might prefer and recreate those conditions in the classroom												
Observe the woodlice over a period of time and explore results using different materials in their habitat												
Predict and explore which material is most effective												
Evaluate the results and talk about what they have discovered												
Make comparisons between different pets' needs and requirements for health and happiness												
Understand some of the key differences between birds, fish, amphibians, reptiles, mammals and invertebrates, carnivores, herbivores and omnivores												

Understand why some animals make good pets and others may not												
Understand what sort of care a pet needs Understand that there are many different types of pets												
Be able to observe the behaviour of different pets, looking at their similarities and differences												

Topic specific vocabulary: Animals Including Humans - People and their Pets

notice	patterns	behaviour	habitat	living things	damp	shady	dry
happy	healthy	explore	investigate	observe	birds	fish	amphibians
invertebrates	group	similarities	difference	Prediction	mammals	reptiles	observations

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Seasonal Changes - Weather Art												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Learn about the weather for the season and consider if the weather they are expecting is typical												
Know what whether to expect during the different seasons of the year												
Make a wind sock and record the direction of the wind. Consider if it will change direction?												
Observe wind direction using a weather vane and compare the effectiveness of weather vane and wind sock												
Talk about what wind is like and what happens when the wind is very strong												
Make a bottle wind spiral and spinner to explore the strength of the wind in the playground												
Understand that the spinner is best for measuring wind strength and explore the idea of recording the results												
Explain what a light source is and the importance of the sun.												
Dim the lights and investigate torches, lamps and candles. Understand the differences												
Know how to make sun catchers that will both absorb the sun and reflect it, using dark and shiny materials												
Make sundials outside and explore to see if the right time can be achieved. Talk about												

why they work and why they sometimes are not effective												
Talk about shadows being formed by something blocking a light source												

Topic specific vocabulary: Seasonal Changes - Weather Art

rain	snow	storm	thunder	lightning	warm	cold	forecast
light source	seasons	wind	strength	direction	sun	spring	shadow
shadow length	change	light	dark	autumn	night	summer	day

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Everyday Materials - Brilliant Builders												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Consider the most suitable materials for fixing a torn umbrella, according to their properties												
Understand why some properties make a material more suitable than others for this task												
Communicate their scientific reasoning for selecting certain materials to fix the torn umbrella												
Consider and investigate the hypothesis "Hard materials cannot absorb water" and make predictions about different materials before testing them												
Decide how to record the results of the investigation in a clear way for others to follow												
Create hypotheses and make predictions about the absorbency of different kitchen paper and disposable cloths												
Investigate which papers are the most absorbent by choosing a method of testing/recording and working in a group												
Understand that if a material does not absorb water, it is said to be waterproof												
Investigate the absorbency of fabrics and the effect of adding a layer of wax crayon												

Discuss the findings and consider the reasons for fabrics being waterproof												
Understand the difference between natural and man-made objects												
Understand and sort the objects into natural and man-made and observe any similarities and differences between the two groups												

Topic specific vocabulary: Everyday Materials - Brilliant Builders

waterproof	absorbent	breaks	tears	materials	properties	absorbency	strong	weak	hypothesis

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Plants - Art and Nature												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Understand that some materials come from plants												
Be able to identify common plants that are useful to us												
Classify items/objects according to their origins (from plants or not from plants)												
Understand why it is important for a plant to spread its seeds												
Understand what is meant by the words 'dispersal/disperse', pollination' and 'seed'												
Examine plants for signs that they have been eaten and consider what is eating them												
Understand what pollen is and the role it plays in helping to make new plants												
Know there are a wide variety of pollen grain designs												
Study parts of plants through magnifying glasses												
Understand the parts of a plant, including facts about the stem and leaves and the seed coat left at the base of the plant												
Explore the outdoor area, looking specifically at the trees Know the similarities and differences between evergreen and deciduous trees												
Be aware of the role of the roots, bark, trunk, branches and leaves of a tree												

Topic specific vocabulary: Plants - Art and Nature

plant	leaf	grow	weed	change	living	healthy	similar to
useful	seed	bean	warmth	nutrients	stem	deciduous	different from
evergreen	flower	trunk	bark	water	roots	branch	shoot

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Everyday Materials - Exploring Changes												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Understand that water is a material and ice is water in a different state												
Observe and record the changes to a block of ice												
Understand what happens to particles in ice when it starts to melt and turn to water												
Observe a block of ice, consider how to change its state and make predictions Devise an investigation to melt the ice quickly or slowly of ice												
Explore the properties of water by looking at puddles in the playground												
write about the best ways of observing and measuring how puddles change over time												
consider what makes a difference to how puddles dry up and the rate at which they do												
Understand how to make a wax resist picture using wax crayons, oil pastels and paint												
Understand why wax resist painting works and the role the wax plays in waterproofing												
why is waterproof material sometimes used for making clothes?												
Can you think of other reasons why a material needs to be made waterproof?												
Understand what happens when a material is heated up and why it changes shape												

understand the importance of recycling materials												

Topic specific vocabulary: Everyday Materials - Exploring Changes

water	ice	melts	frozen	observe	materials	properties	absorbency	waterproof	strong	resist

SCIENCE: KS1 – Assessment tracker: Year 1 & 2												
Topic: Living Things and Their Habitats - Habitats and Homes												
Pupils:												
Targets Children can/know/explain/understand:												
ask simple questions and recognise that they can be answered in different ways												
observe closely, using simple equipment												
performing simple tests												
identify and classify												
using their observations and ideas to suggest answers to questions												
gather and record data to help in answering questions												
Understand that growing conditions need to be right for plants to grow												
Understand what needs consideration when creating micro-habitats												
Understand that different habitats provide for the basic needs of different kinds of mini-beasts and plants and that they depend on each other												
Understand what a farm is and how they help us. (Arrange a farmer to visit school if possible)												
Know that there are many different types of farm												
Know five jobs that are done on a farm												
Consider the impact farming has on the habitats of animals that live within the farms												
Understand that creating different micro-habitats will encourage a variety of creatures												
Understand that some invertebrates like cool, damp conditions and some prefer the sun, so the bug hotel will need to be located to incorporate both conditions												
In groups, design and add a layer to the bug hotel, incorporating specific micro-habitats agreed for that group by the class												
Predict what each micro-habitat, within the bug hotel, will attract the most animals.												

do any of the bug hotel micro-habitats need adapting? Are they being successful? How do we know? Does the weather or do the seasons make a difference to the occupancy of the bug hotel? Do we predict it will be more or less popular when it is raining? Or in the summer?												
Observe and harvest the edible foods you have grown. Study them carefully, photographing and sketching them Understand how the foods stayed healthy (or not) by discussing their gardening together as a class												

Topic specific vocabulary: Living Things and Their Habitats - Habitats and Homes

growth	germination	planting	edible	mini-beasts	habitats	grow	allotment	produce	soil	wash	cook	harvest

Key Threshold Milestone 2 (Year 3 & 4)

– Assessment Tracker (print one copy of this page for each year group and tick/date the Milestone 2 targets when they are covered in class).

Class name: **Year groups:** **Academic year:**

Year groups	**Work scientifically** This concept involves learning the methodologies of the discipline of science.	**Biology**		**Chemistry**		**Physics**	
3 & 4 Milestone 2	• Ask relevant questions. • Set up simple, practical enquiries and comparative and fair tests. • Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers. • Gather, record, classify and present data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Use results to draw simple conclusions and suggest improvements, new questions and	**Understand plants** This concept involves becoming familiar with different types of plants, their structure and reproduction.	• Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Investigate the way in which water is transported within plants. • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	**Investigate materials** This concept involves becoming familiar with a range of materials, their properties, uses and how they may be altered or changed.	**Rocks and Soils** • Compare and group together different kinds of rocks on the basis of their simple, physical properties. • Relate the simple physical properties of some rocks to their formation (igneous or sedimentary). • Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock. • Recognise that soils are made from rocks and organic matter. **States of Matter** • Compare and group materials together, according to	**Understand movement, forces and magnets** This concept involves understanding what causes motion.	• Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. • Describe magnets as having two poles.
		Understand animals and humans This concept involves becoming familiar with different types of animals, humans and the life processes they share.	• Identify that animals, including humans, need the right types and amounts of nutrition, that they cannot make their own food and they get nutrition from what they eat. • Construct and interpret a variety of food chains, identifying producers, predators and prey. • Identify that humans and some animals have skeletons and muscles for support, protection and movement. • Describe the simple functions of the basic parts of the digestive system in humans.				

	predictions for setting up further tests. • Identify differences, similarities or changes related to simple, scientific ideas and processes. • Use straightforward, scientific evidence to answer questions or to support their findings.		• Identify the different types of teeth in humans and their simple functions.		whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics. • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		• Predict whether two magnets will attract or repel each other, depending on which poles are facing.
		Investigate living things This concept involves becoming familiar with a wider range of living things, including insects and understanding life processes.	• Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys. • Recognise that environments can change and that this can sometimes pose dangers to specific habitats.				
		Understand evolution and inheritance This concept involves understanding that organisms come into existence, adapt, change and evolve and become extinct.	• Identify how plants and animals, including humans, resemble their parents in many features. • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Identify how animals and plants are suited to and adapt to their environment in different ways.			**Understand light and seeing** This concept involves understanding how light and reflection affect sight.	• Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by a solid object. • Find patterns in the way that the

							size of shadows change.
						Investigate sound and hearing This concept involves understanding how sound is produced, how it travels and how it is heard.	• Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear.
						Understand electrical circuits This concept involves understanding circuits and their role in electrical applications.	• 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.
						Understand the Earth's movement in space This concept involves understanding what causes seasonal changes, day and night.	• Describe the movement of the Earth relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth.

TOPICS TAUGHT in Lower KS2:

In addition to the specific skills that the children will keep revisiting through the key concepts or substantive knowledge there will be specific learning related to individual topics. At Stapleford Primary School children are taught in mixed age classes e.g. Years 3 & 4 together etc. As a result, we have a two-year topic plan to prevent the children repeating subject matter. More detail is shown below as to what will be taught within each topic.

Lower KS2 (Class 2 – Year 3 & 4) Rolling Programme

Subject	**Year A** (2022-2023), (2024-2025) (2026-2027) etc.			**Year B** (2021-2022), (2023-2024), (2025-2026) etc.		
	Autumn Term	Spring Term	Summer Term	Autumn Term	Spring Term	Summer Term
Science (See Hamilton Trust scheme of work)	MAGNETIC FUN AND GAMES Year 3 ***Forces and Magnets*** FIT FOR SUCCESS Year 3 ***Animals including humans***: focus on food, nutrition, skeleton	A WORLD OF LIVING THINGS Year 4 ***Living things and their habitats*** A FEAST OF FLOWERS, FRUITS AND SEEDS Year 3 ***Plants***: focus on life cycles	WHAT'S THE MATTER? Year 4 ***States of matter*** SOUNDS SPECTACULAR Year 4 ***Sound***	THIS PLANET ROCKS Year 3 ***Rocks*** SHINING THE LIGHT Year 3 ***Light***	HABITAT HELPERS Year 4 ***Animals including humans*** GREATLY GREEN GROWERS Year 3 ***Plants***: focus on plants and their needs and how they work	THE CIRCLE OF LIFE Year 4 ***States of matter*** ELECTRIC PERSONALITIES Year 4 ***Electricity***

Milestone 2: Vocabulary (words to revisit throughout the two-years that the children study Milestone 2).

Forces and Magnets - Magnetic Fun and Games
force, push, pull, prediction, fair test, investigate, measure, friction, twist, gravity, magnetism, contact, Newton, force meter, plot, magnet, magnetic, attract, attraction, question, strength, investigation, non-magnetic, theory, metal, iron, steel, repel, repulsion, poles, north, south, time, record, check, strength

Animals Including Humans - Fit for Success
herbivore, carnivore, omnivore, nutrition, diet, food chain, data, table, bar chart, carbohydrates, proteins, dairy, fats, sugars, vitamins, minerals, fibre, growth, repair, health, energy, vertebrate, invertebrate, bone, skeleton, skull, ribcage, pelvis, femur, muscles, joints, tendons, contract, relax, biceps, triceps, data, scattergram, lungs, diaphragm, heart, investigate, measure, compare, breathing rate

Living Things and Their Habitats - A World of Living Things
life processes, movement, reproduction, sensitivity, nutrition, excretion, respiration, growth, living things, oxygen, energy, waste products, senses, environment, plants, animals, similarities, differences, kingdom, classify, classification, flowering plants, trees, mosses, ferns, spores, cones, leaves, flowers, seeds, vertebrates, invertebrates, insects, spiders, worms, woodlice, habitat, slugs, snails, molluscs, annelids, echinoderms, arthropods, crustaceans, arachnids, fish, amphibians, birds, reptiles, mammals, warm blooded, cold blooded, scales, feathers, fur, hair, milk, adapted

Plants - Feast of Flowers, Fruits & Seeds
botany, botanist, botanical, petals, reproduction, male, female, stigma, style, stamens, seed, nectar, pollination, fertilisation, bee, pollen, waggle dance, honey, hive, attract, transfer, ovary, ovules, pollen grains, fruit, pod, parent plant, dispersal, germination, investigate, fair test, record, results

States of Matter - What's the Matter?
states of matter, material, solid, liquid, gas, natural, manmade, classify, molecule, atom, bonds, air, oxygen, nitrogen, carbon dioxide, argon, change state, bromine, ice, freeze, melt, heat, energy, solidify, vapour, evaporation, condensation, condense, water vapour, invisible, particles, precipitation, water cycle, steam, droplets, water

Sound - Sounds Spectacular!
music, sound, noise, investigate, explain, vibration, vibrate, ears, hear, travel, air, water, solid, source, sound waves, sound proof, medium, transmit, detect, vibrating, energy, decibel, fair test, data, graph, loudness, volume, strength, rhythm, stronger, weaker, pitch, note, high, low, tune, instrument, change

Rocks - This Planet Rocks
rock, sandstone, limestone, chalk, granite, slate, marble, classification, observation, petrologist, man-made rocks, brick, tile, concrete, igneous, sedimentary, metamorphic, permeable, impermeable, acid, erosion, identification key, bedrock, properties, fossil, ichthyosaur, plesiosaur, ammonite, sediment, minerals, mould, cast, soil, micro-organisms, organic matter, particles, sand, silt, fair test, compare, sort, predict

Light - Shining the Light
light, beam, darkness, illuminate, straight lines, investigate, light source, reflector, reflect, predict, fair test, reflective materials, mirror, reflection, image, angle, line of reflection, concave, convex, symmetrical, transparent, translucent, opaque, shadow, screen, block, measure, distance, plot, graph, data, results, rainbow, white light, spectrum, prism, refraction, dispersion, torch, lamp

Living Things and Their Habitats - Habitat Helpers
environment, habitat, ecosystem, pollution, climate change, human activity, survey, evidence, data, adapted, adaptation, depend, survival, natural, manmade, changes, global warming, greenhouse gases, carbon dioxide, temperature, waste, landfill, incinerator, reduce, reuse, recycle, plastic, break down, material, deforestation, sustainable, unsustainable, population, species, endangered, threatened, erosion

Plants - Greatly Green Growers
plants, growth, light, warmth, air, soil, water, investigate, seedlings, research, height, root, stem, leaves, flowers, petals, shoots, buds, fruits, seeds, classify, data logger, light level, temperature, wilting, yellowing, requirement, measure, record, data, table, line graph, bar graph, lux, transported, results

Animals Including Humans - The Circle of Life
digestion, digestive system, organ, saliva, peristalsis, oesophagus, stomach, acid, intestines, faeces, enzymes, gastric acid, bowels, villi, colon, rectum, anus, faeces, jaw, incisors, molars, premolars, canines, tear, grind, chew, gums, enamel, bacteria, tooth decay, herbivore, carnivore, omnivore, diet, features, adaptations, life style, survival, predator, prey, food chain, food web, producer, consumer, energy, scavengers, decomposers, breakdown, recycle

Electricity - Electric Personalities
electricity, cell, battery, plug, mains, cable, appliance, device, connection, power, danger, safety, circuit, wire, lead, crocodile clip, bulb, bulb holder, buzzer, power, energy, flow, current, switch, motor, component, conductor, insulator, disconnect, pressure, design, test, adapt, modify

The Assessment Tracker documents below outline what children will learn within each topic

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Forces and Magnets - Magnetic Fun and Games												
Pupils:												
Targets Children can/know/explain/understand:												
Ask relevant questions and use different types of scientific enquiries to answer them												
set up simple practical enquiries, comparative and fair tests												
make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers												
gather, record, classify and present data in a variety of ways to help in answering questions												
record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables												
report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions												
use 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												
use straightforward scientific evidence to answer questions or to support their findings												
Play a game in teams to explore all the different ways forces can act on a variety of everyday objects												
Classify forces as either pushes or pulls and understand that whilst some need contact, others do not												
Conduct a fair test to compare the movement of vehicles on different surfaces												
Investigate the force needed to pull an object carrying different weights, then plot data on a bar graph												
Explore magnetism and generate scientific questions that can be investigated												

Plan and carry out a fair test												
Tabulate results and use them to draw conclusions and raise further questions												
Make predictions on which items will be magnetic												
Methodically test, classify and sort different items/ materials according to which are magnetic												
Record findings and report back on them to the class												
Explore how magnets behave towards one another and form theories to try to explain findings by either investigating magnetic, bars or floating ring magnets												
Learn that magnets have 2 poles and that same poles repel whilst opposite poles attract												
Work in a group to devise and create an educational toy or game that works using magnetism. Consider what each toy or game will teach children about magnetism.												

Topic specific vocabulary: Forces and Magnets - Magnetic Fun and Games

force	push	pull	prediction	fair test	investigate	measure	friction	twist
magnetism	contact	Newton	Force meter	plot	magnet	magnetic	attract	attraction
strength	investigation	non-magnetic	theory	metal	iron	steel	repel	repulsion
north	south	time	record	gravity	question	poles	check	strength

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Animals Including Humans - Fit for Success												
Pupils:												
Targets Children can/know/explain/understand:												
Ask relevant questions and use different types of scientific enquiries to answer them												
set up simple practical enquiries, comparative and fair tests												
make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers												
gather, record, classify and present data in a variety of ways to help in answering questions												
record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables												
report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions												
use 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												
use straightforward scientific evidence to answer questions or to support their findings												
reinforce vocabulary and understanding of animal feeding categories												
Review data from a food survey and answer a questions on daily sugar intake and on the number of portions of fruit and vegetables that should be eaten each day												
Display data in tables and bar charts and use these to look for patterns and trends												
sort foods into categories e.g. dairy, protein etc.												
Create a model of a balanced meal for a paper plate using a variety of modelling materials												

Use knowledge of nutrition to create/complete a sheet on health advice												
Name the bones on a skeleton e.g. skull, spine												
Investigate how muscles work in pairs (biceps & triceps) using a bottle of water as a weight												
Collect data to investigate the link between leg muscle strength and the type and amount of regular exercise With guidance display data as a scattergram and use it to look for a pattern in the data												
Know how the heart and lungs get oxygen to the muscles where it is needed to make energy												
Plan and carry out an investigation in groups that attempts to answer a scientific question - *Do people who exercise a lot get their breath back more quickly after strenuous exercise?* Display and interpret data collected and seek to explain findings												
Reflect on their own life and consider positive changes they could make to improve their health and fitness												

Animals Including Humans - Fit for Success

herbivore	carnivore	omnivore	nutrition	diet	food chain	data	table	proteins
vitamins	minerals	fibre	growth	fats	bar chart	repair	health	energy
invertebrate	bone	skeleton	skull	sugars	carbohydrates	ribcage	pelvis	femur
joints	tendons	contract	relax	biceps	triceps	data	scattergram	lungs
heart	investigate	measure	compare	dairy	breathing rate	vertebrate	muscles	diaphragm

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Living Things and Their Habitats - A World of Living Things												
Pupils:												
Targets Children can/know/explain/understand:												
Ask relevant questions and use different types of scientific enquiries to answer them												
set up simple practical enquiries, comparative and fair tests												
make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers												
gather, record, classify and present data in a variety of ways to help in answering questions												
record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables												
report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions												
(**not** 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												
use straightforward scientific evidence to answer questions or to support their findings												
Learn about the 7 life processes that characterise all living things and list facts for all 7.												
write a description for each of the 7 life processes												
Learn that living things can be grouped in different ways according to their features												
Research plants using non-fiction books and the internet and write fascinating facts about them.												
Hunt for invertebrates in their local environment and bring specimens back to the classroom												

Use an invertebrate key to identify the group/type of creatures found, e.g. mollusc/slug												
Illustrate the page with drawings and invertebrate facts												
Make a classification key for living things using group labels												
Research key facts about amphibians and fish												
Make a pop-up, interactive sorting page on the features of birds and reptiles												
Design a fair test to investigate the insulation properties of feathers												
Take accurate temperature readings over time and compare data from a bottle covered in feathers to one without feathers												
Display the data on a graph												
Use books and internet to research mammals. Create an information text to display what you have learnt.												

Living Things and Their Habitats - A World of Living Things

life processes	movement	reproduction	sensitivity	nutrition	excretion	respiration	growth
energy	oxygen	senses	environment	plants	animals	similarities	differences
kingdom	classify	classification	trees	mosses	ferns	spores	cones
leaves	flowers	seeds	vertebrates	invertebrates	insects	spiders	worms
habitat	slugs	snails	molluscs	annelids	echinoderms	arthropods	crustaceans
fish	amphibians	birds	mammals	cold blooded	scales	feathers	arachnids
hair & fur	milk	adapted	flowering plants	waste products	living things	warm blooded	woodlice

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Plants - Feast of Flowers, Fruits & Seeds												
Pupils:												
Targets Children can/know/explain/understand:												
Ask relevant questions and use different types of scientific enquiries to answer them												
set up simple practical enquiries, comparative and fair tests												
making systematic and careful observations **(not taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers)**												
(not 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**, (not keys, bar charts, and tables)**												
report 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												
use straightforward scientific evidence to answer questions or to support their findings												
Closely observe a variety of flowers with magnifiers and record this in the form of annotated botanical illustrations												
Create a model flower and begin to know and name the male and female parts within it												
know the names and functions of the parts within a flower												
Discuss where ingredients come from for a saffron and vegetable paella												
Discover the role played by insects in pollination and play a quiz game to reinforce vocabulary and concepts												

Learn to do a Waggle Dance and know this is how bees communicate with other bees												
Consolidate knowledge of pollination by completing a sequencing puzzle in pairs												
Examine plant specimens that show the development of fruits from pollinated flowers and generate questions and theories about the process												
Explain how fertilization takes place and how this leads to the development of fruits and seeds												
Make detailed pastel drawings of sections through fruits												
Classify fruits into groups according to similarities of structure and type												
Investigate wind dispersal by setting up fair tests to determine the effect of varying size/weight or material/shape on the flight of a paper spinner												
Record and report on results and then use them to generate further questions												
Make chewy no bake granola bars and discuss the origins of the various ingredients												
Work in groups to prepare a presentation of information or findings about the topic to an audience												
Take part in a quiz on flowers, fruits and seeds to assess knowledge and understanding of the scientific concepts and vocabulary introduced in this block												

Plants - Feast of Flowers, Fruits & Seeds

botany	botanist	botanical	petals	reproduction	male	female	stigma
seed	nectar	pollination	fertilisation	bee	pollen	waggle dance	honey
transfer	ovary	ovules	pollen grains	fruit	pod	Parent plant	dispersal
germination	record	results	stamens	attract	investigate	style	hive

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: States of Matter - What's the Matter?												
Pupils:												
Targets Children can/know/explain/understand:												
Ask relevant questions and use different types of scientific enquiries to answer them												
set 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												
report 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												
use straightforward scientific evidence to answer questions or to support their findings												
Actively explore the properties of a range of materials, discuss them and classify each as either a solid, a liquid or a “hard to classify material”												
create a set of sorting cards that describe the properties of liquids and solids												
understand why solids and liquids behave differently by looking at a simple explanation of how molecules are arranged in each												
Do a Solids and Liquids puzzle to consolidate scientific knowledge introduced previously												
Investigate the nature of gases through a variety of practical activities												

write an explanation of what the activities reveal about the nature of gases												
Use a data logger to record the temperature of water in a jug before and after the addition of ice												
Play an active game/role play to simulate the arrangement of particles in solids, liquids and gases												
Observe and record the changes in state in a dessert of ice cream and chocolate sauce by making an annotated drawing and writing an explanation												
Observe water changing state through a practical demonstration and use the correct scientific terms for these changes												
Set up a fair test in groups to investigate the factors affecting the speed of evaporation												
draw up a table to record the results of their investigation												
explain how water changes state using given scientific vocabulary appropriately												
As a class make a sealed indoor garden that creates an internal water cycle that mirrors what occurs naturally on planet Earth												
Describe the water cycle independently using scientific vocabulary												
Take part in a quiz to assess their knowledge of all the scientific vocabulary and concepts covered in this block of learning												

States of Matter - What's the Matter?

states of matter	material	solid	liquid	gas	natural	manmade	classify	molecule
carbon dioxide	air	oxygen	nitrogen	bonds	argon	bromine	ice	freeze
change state	heat	energy	solidify	vapour	evaporation	condensation	condense	invisible
water vapour	precipitation	atom	melt	particles	steam	water cycle	droplets	water

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Sound - Sounds Spectacular!												
Pupils:												
Targets Children can/know/explain/understand:												
Ask relevant questions and use different types of scientific enquiries to answer them												
set 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												
report 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												
use straightforward scientific evidence to answer questions or to support their findings												
Watch a film clip of the rhythm band 'Stomp', and discuss the sounds, rhythm and genre												
Consider how everyday objects make sounds and know that these can be turned into music												
Create a bank of favourite sounds with explanations of how they are generated and consider how each sound can be varied												
Investigate vibrations through sight and touch as well as hearing												
Deduce that sounds are made from vibrations. Discover first hand that when objects vibrate, sound is created and that												

vibrations spread out from the source of a sound												
Investigate which materials transmit sound and which do not including water												
Consider different animal ears as sound detectors and design a class investigation to compare hearing with bare ears, a cupped hand around your ear or a cardboard animal ear												
Write notes on the investigation and findings + use data to construct a bar graph.												
Discuss findings of the investigation and draw conclusions												
Explore how to play a repeated rhythm and change the volume up and down												
Explain the changes of volume in terms of energy and strength of vibration												
Explore a range of musical instruments and investigate how they play low and high pitched notes												
Create a tuned musical instrument using everyday materials, recording this with an annotated drawing that labels how the high pitched notes and low pitched notes are played												
Explain the connection between pitch and the size of the vibrating object												
Take part in a quiz on sound that will assess children's learning of all the scientific concepts and vocabulary covered in this block												

Sound - Sounds Spectacular!

music	sound	noise	investigate	explain	vibration	vibrate	ears	hear
air	water	solid	source	sound waves	medium	transmit	detect	vibrating
decibel	stronger	data	graph	sound proof	loudness	volume	strength	rhythm
weaker	pitch	note	low	tune	instrument	change	travel	energy

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Rocks - This Planet Rocks												
Pupils:												
Targets Children can/know/explain/understand:												
Ask relevant questions and use different types of scientific enquiries to answer them												
set 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												
report 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												
use straightforward scientific evidence to answer questions or to support their findings												
Ask questions that can be answered through scientific enquiry												
Make detailed drawings of 6 common rocks and write descriptions of their observable features												
Learn the names of 6 common rocks Write and perform a TV presenter's script that is an introduction to the series or showing, naming and describing the 6 names rock samples												
Learn the 3 different ways that rocks can be formed (Yr3 &4)												
Conduct a rock test for hardness and try to make it fair												

Conduct a rock test for permeability and try to make it fair												
Conduct an acid test and use the results to identify samples of rock using an identification key												
Take part in an active quiz game to assess and reinforce prior learning on rocks												
During Forest School, gather information on rocks found/used in the local area												
Determine the local bedrock												
Find evidence of rock erosion and how different rocks are used for different jobs and why												
Engage (through roleplay) with the great fossil hunter Mary Anning by asking questions												
Learn how fossils are made and record the stages through writing and illustrating												
Handle real fossils and rehearse the stages of fossil formation through oral retelling												
learn some amazing facts about soil and the role it plays in supporting life												
Closely observe soil with hand lenses and list and classify the constituent parts												
investigate and compare 3 different soils – to what extent different soils drain and absorb water and how the colour, size and proportion of the constituent parts may vary from soil to soil												
With support, draw conclusions on the reasons for variation between soils												
Take part in a quiz to assess and review their knowledge of rocks, fossils and soils												
Give clear explanations of scientific content using appropriate technical vocabulary												

Rocks - This Planet Rocks

rock	sandstone	limestone	chalk	granite	slate	marble
man-made rocks	brick	tile	concrete	igneous	sedimentary	metamorphic
erosion	bedrock	properties	fossil	ichthyosaur	plesiosaur	ammonite
identification key	cast	soil	organic matter	particles	sand	silt
micro-organisms	sort	predict	petrologist	acid	mould	cast
observation	impermeable	minerals	compare	classification	permeable	sediment

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Light - Shining the Light												
Pupils:												
Targets Children can/know/explain/understand:												
Ask relevant questions and use different types of scientific enquiries to answer them												
set 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												
report 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												
use straightforward scientific evidence to answer questions or to support their findings												
investigate the nature of darkness, light and human sight with a torch, a cardboard box and pencil holes												
Use their findings to draw conclusions on how light travels and our dependence on light to see												
Investigate which colours show up best in the dark and which are hard to see												
Discover why shiny and reflective materials appear to glitter or shine in torchlight												
Investigate how light reflects off mirrors and other shiny surfaces to give a clear reflection												

Investigate how writing is reflected back to front and how back to front writing looks normal when viewed through a mirror												
Experiment with angles of reflection using strings attached to a mirror												
Discover the meaning of opaque, transparent and translucent and learn that each casts a different type of shadow												
Investigate how the orientation of an object affects the shadow by making hand shadows												
Investigate how shadows can be seen from the other side of a translucent screen												
explore how the distance of the light source from the object affects the size of a shadow												
Look for patterns and try to answer questions												
Take accurate measurements of shadows whilst controlling the distance of the light source												
Observe a demonstration of light travelling in straight lines to help understand and explain shadow data												
Use secondary sources to research how rainbows are formed												
Actively investigate the occurrence of rainbows using bubbles, CDs and prisms												

Light - Shining the Light

light	beam	darkness	illuminate	straight lines	investigate	reflector	reflect
fair test	mirror	reflection	image	reflective materials	angle	concave	convex
transparent	translucent	opaque	shadow	light source	screen	block	measure
plot	graph	data	results	line of reflection	rainbow	white light	spectrum
prism	refraction	dispersion	predict	symmetrical	distance	torch	lamp

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Living Things and Their Habitats - Habitat Helpers												
Pupils:												
Targets Children can/know/explain/understand:												
set 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												
report 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												
use straightforward scientific evidence to answer questions or to support their findings												
Understand the meaning of key scientific words like *habitat, ecosystem, survey* and *evidence*												
Undertake a habitat survey in the local environment												
Review the findings of their survey and consider the interdependence of the living things that make up that particular ecosystem												
Learn that living things are adapted to live in their habitat and describe some ways they do this												
Discover that when habitats change, plants and animals can be in danger												
classify habitat changes as either caused by nature or caused by humans												

describe how a chosen animal lives in a particular habitat and describe how it has adapted												
Learn that climate change/global warming is caused by greenhouse gases that trap heat												
Set up an experiment to measure how temperature is affected by a greenhouse												
Record the experiment, draw a table of results and a bar graph to show findings												
Design a poster to show how we can reduce the amount of carbon dioxide we produce												
Discover that habitats can change disastrously because of the things humans throw away												
Analyse the items thrown away by a family in a week: Measure the frequency of each material thrown away and create a frequency table and bar graph												
consider which of these thrown away household items can be reduced, reused or recycled												
understand that some habitats are lost because humans use the land for another purpose												
Compare the effect of rain on a hill with vegetation and a hill that is bare. What is the impact on erosion?												
Research animals endangered by loss of habitat and present findings to the class												
Take part in a quiz on Habitats and Changes that will assess their learning of all the scientific concepts and vocabulary covered in this block												
Attempt to persuade others to make better environmental choices by presenting scientific arguments backed up with evidence												

Living Things and Their Habitats - Habitat Helpers

environment	habitat	ecosystem	pollution	climate change	survey	evidence	data	adaptation
depend	survival	natural	manmade	human activity	carbon dioxide	adapted	temperature	waste
landfill	incinerator	reduce	reuse	global warming	recycle	plastic	break down	material
deforestation	sustainable	unsustainable	population	greenhouse gases	species	endangered	threatened	erosion

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Plants - Greatly Green Growers												
Pupils:												
Targets Children can/know/explain/understand:												
ask relevant questions and use different types of scientific enquiries to answer them												
set 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												
report 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												
use straightforward scientific evidence to answer questions or to support their findings												
Discuss and decide all the requirements they think plants need to grow strong and healthy												
Set up a plant growth investigation to test their theories												
Over several weeks take measurements of height of plants (bean plant investigation) as they grow and make notes on observations. Make comparisons and predictions.												
Research some interesting plant facts from books and the Internet and create a display of “Did you know …?”												
Closely observe whole specimen plants and make detailed, labelled and annotated drawings												

Classify different foods as either root, stem/shoot, leaf, flower, fruit or seed												
Create detailed models or pastel drawings of sections through fruits showing flesh, skin, seeds etc.												
Continue to take notes and measurements on the bean seedlings investigation and report to the class on how their requirement seems to be affecting health and growth												
investigate the way in which water is transported within plants (food dye investigation)												
compare light (and temperature) levels inside and outside classroom. Discuss how this could impact a plant's growth.												
Make a summary of class findings from the seedling investigation with notes and drawings of results												
Recap on all the requirements of plants for health and growth by using the findings to give detailed advice on growing strong, healthy plants												

Plants - Greatly Green Growers

plants	growth	light	warmth	air	soil	water	investigate	seedlings
height	root	stem	leaves	flowers	petals	shoots	buds	fruits
classify	data logger	light level	temperature	wilting	yellowing	requirement	measure	record
table	line graph	bar graph	lux	transported	results	research	seeds	data

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Animals Including Humans - The Circle of Life												
Pupils:												
Targets Children can/know/explain/understand:												
ask relevant questions and use different types of scientific enquiries to answer them												
set up simple practical enquiries, comparative and fair tests												
making systematic and careful observations 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												
report 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												
Use everyday objects to demonstrate peristalsis and the other workings of the digestive system												
Label and explain the function of the various parts of the digestive system												
Create movement patterns (dance) to demonstrate the way peristalsis works in digestive tubes to move food along and the way the stomach can churn, stretch and contract to mix food with acid												
create 8 fascinating facts on the digestive system												
Create movement sequences (dance) to music that illustrate digestive processes which can be performed during the narrated explanatory scripts												
Eat a slice of apple and observe the function of different teeth in biting and chewing												
write an explanation of the structure and function of the 4 types of teeth												
Discuss distinctive features and adaptations of different animals												

Explain the different diets of carnivores, herbivores and omnivores and know how you can deduce an animal's diet by studying its teeth												
Based on their own research children write a paragraph on their chosen animal's diet												
understand why an animal's poo varies according to its diet, life style and health												
Construct a food web and use it to derive information on predators, prey, producers and consumers												
Understand, reason and discuss the interconnectivity between living things in a food web												
identify a variety of decomposers and learn more about them												
Make some close observations of decomposers and the evidence of the decomposition process using magnifying lenses												
Write an explanation of the role of decomposers by using key words to write an explanatory paragraph												

Animals Including Humans - The Circle of Life

digestion	digestive system	organ	saliva	peristalsis	oesophagus	stomach	acid
enzymes	gastric acid	bowels	villi	colon	rectum	anus	faeces
grind	tooth decay	jaw	incisors	molars	premolars	canines	tear
chew	gums	enamel	bacteria	herbivore	carnivore	omnivore	diet
adaptations	life style	survival	predator	prey	food chain	food web	producer
energy	scavengers	decomposers	breakdown	recycle	intestines	grind	consumer

SCIENCE: KS2 – Assessment tracker: Year 3 & 4												
Topic: Electricity - Electric Personalities												
Pupils:												
Targets Children can/know/explain/understand:												
ask relevant questions and use different types of scientific enquiries to answer them												
set 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												
report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions												
use 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												
use straightforward scientific evidence to answer questions or to support their findings												
Actively explore some electrical appliances and devices to ask questions and begin to answer them												
learn basic electrical concepts and vocabulary												
Create either a leaflet or poster explaining the dangers of electricity												
Understand that electricity is a versatile power source												
Actively explore how a bulb can be lit using a cell and 2 leads												
know that a continuous loop or circuit is necessary for electricity to flow												
Make predictions on which drawn “circuits” will work and which will not and give an explanation for their theory												
Test out their ideas regarding the above circuits and write their results in a table												

Discover the function of a switch and begin to learn electrical symbols for components												
Test a variety of materials for electrical conductivity and record results in a table and begin to draw conclusions												
Recap on which materials are electrical conductors and which are insulators												
Plan a working electrical model - An Electric Personality and build the circuit required												
Understand the difference between an on/off switch and a pressure switch and build one of these into their circuit												
Draw their circuit either using recognised symbols												
Construct a working electrical model from their own plan and adapt it where necessary to overcome problems												
Learn how to create secure wiring for a durable electrical device												
Work on finishing their working electric model, focussing on technical and aesthetic qualities												
Evaluate their model by identifying positive features and points that could be improved												
Consult the opinions of others and record their views as part of the evaluation process												

Electricity - Electric Personalities

electricity	cell	battery	plug	mains	cable	appliance	device
energy	flow	current	switch	motor	component	conductor	insulator
design	test	adapt	modify	power	pressure	connection	disconnect

Key Threshold Milestone 3 (Year 5 & 6)

– Assessment Tracker (print one copy of this page for each year group and tick/date the Milestone 3 targets when they are covered in class).

Class name: **Year groups:** **Academic year:**

Year groups	**Work scientifically** This concept involves learning the methodologies of the discipline of science.	**Biology**		**Chemistry**		**Physics**	
5 & 6 Milestone 3	• Plan enquiries, including recognising and controlling variables where necessary. • Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. • Take measurements, using a range of scientific equipment, with increasing accuracy and precision. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. • Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.	**Understand plants** This concept involves becoming familiar with different types of plants, their structure and reproduction.	• Relate knowledge of plants to studies of evolution and inheritance. • Relate knowledge of plants to studies of all living things.	**Investigate materials** This concept involves becoming familiar with a range of materials, their properties, uses and how they may be altered or changed.	• Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets. • Understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.	**Understand movement, forces and magnets** This concept involves understanding what causes motion.	**Magnets** • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. **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 effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces.

	• Present findings in written form, displays and other presentations. • Use test results to make predictions to set up further comparative and fair tests. • Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.				• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning, oxidisation and the action of acid on bicarbonate of soda.		• Describe, in terms of drag forces, why moving objects that are not driven tend to slow down. • Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. • Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.
		Understand animals and humans This concept involves becoming familiar with different types of animals, humans and the life processes they share.	• Describe the changes as humans develop to old age. • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions. • Describe the ways in which nutrients and water are transported within animals, including humans.			**Understand light and seeing** This concept involves understanding how light and reflection affect sight.	• Understand 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 eyes. • Use the idea that light travels in straight lines to explain why

		Investigate living things This concept involves becoming familiar with a wider range of living things, including insects and understanding life processes.	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals. • Describe how living things are classified into broad groups according to common observable characteristics. • Give reasons for classifying plants and animals based on specific characteristics.				shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes. • 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.
		Understand evolution and inheritance This concept involves understanding that organisms come into existence, adapt, change and evolve and become extinct.	• 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. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.			**Investigate sound and hearing** This concept involves understanding how sound is produced, how it travels and how it is heard.	• Find patterns between the pitch of a sound and features of the object that produced it. • 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.
						Understand electrical circuits This concept involves understanding circuits and their role in electrical applications.	• 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.
						Understand the Earth's movement in space This concept involves understanding what causes seasonal changes, day and night.	• 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.

TOPICS TAUGHT in Upper KS2:

In addition to the specific skills that the children will keep revisiting through the key concepts or substantive knowledge there will be specific learning related to individual topics. At Stapleford Primary School children are taught in mixed age classes e.g. Years 5 & 6 together etc. As a result, we have a two-year topic plan to prevent the children repeating subject matter. More detail is shown below as to what will be taught within each topic.

Upper KS2 (Class 1 – Years 5 & 6) Rolling Programme

Subject	**Year A** (2022-2023), (2024-2025) (2026-2027) etc.			**Year B** (2021-2022), (2023-2024), (2025-2026) etc.		
	Autumn Term	Spring Term	Summer Term	Autumn Term	Spring Term	Summer Term
Science (See Hamilton Trust scheme of work)	ILLUSTRATING LIFE CYCLES Y5 ***Living things and their habitats*** MATERIALS CONSULTANTS Y5 ***Properties and changes of materials***	THE HUMAN SPECIES Y5 and Y6 ***Animals including humans*** THEATRE LIGHTING TECHNICIANS Y6 ***Light***	ELECTRIC ART Y6 ***Electricity*** MEDICAL MANOEUVRES Includes more Y5 and Y6 content on ***Animals including humans***	SPECIAL EFFECTS MATERIALS Y5 ***Properties and changes of materials*** SPACE! Y5 ***Earth and space***	WELCOME TO FORCE-LAND Y5 ***Forces*** THE CLASSIFICATION CODE Y6 ***Living things and their habitats***	SURVIVAL OF THE FITTEST Y6 ***Evolution and inheritance*** SENSATIONAL SCIENCE Includes more Y5 and Y6 content on ***Properties and changes of materials***

Milestone 3: Vocabulary (words to revisit throughout the two-years that the children study Milestone 3).

Living things and their habitats – Illustrating Life Cycles

gamete, stamen, stigma, carpel, pistil, pollination, germination, flowering, sexual reproduction, life cycle, seed, pollen, anther, filament, style, ovary, botanical illustration, dissection, corm, bulb, spores, cutting, fern, moss, liverwort, tubers, asexual, non-flowering, propagation, artificial, metamorphosis, amphibian, insect, mammal, bird, gestation, foetus, sperm, uterus, chick, egg, baby, adult, reproduction, natural scientist, naturalist, observation, conservation, endangered

Animals including humans - The Human Species

causal relationships, support/refute, gestation, life cycle, sperm, egg, foetus, development, child ,adolescence, adolescent, puberty, teenager, reproduction, puberty, penis, scrotum, sperm tube (vas deferens), testicles, genitals, childhood, erection, babyhood, period, adult, wet dream, pubic hair, ejaculation, menarche, pregnancy, uterus/womb, clitoris, foreskin, contraceptive, vagina, menstruation, aging, old age, elderly, growth, change, death, timeline, diet, exercise, lifestyle, health, drugs, addiction, disease, medicine, alcohol, cigarettes, stimulant, depressant, analgesic, hallucinogen, blood, blood vessels, arteries, veins, capillaries, heart, pump, oxygen, carbon dioxide, circulation, circulatory system, nutrients, water,

Electricity – Electric Art

Electricity, electrical circuit, complete circuit, circuit symbol, components, cell, battery, positive/negative, connect/connection, loose connection, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, fast(er)/slow(er), voltage, current, conductor, insulator, metal/non-metal, enquiry question, investigation, findings, resistance, scatter diagram, causal relationship, circuit diagram & symbol, appliances/device, flow

Properties and changes of materials – Materials Consultants

Opinion/fact, comparative, fair test, scatter graph, material & property names, enquiry, use, reasoning, Insulator, conductor, thermal, prediction, line graph, variables, accuracy, precision, comparable, strength, transparent, opaque, absorption, hardness, porous/non-porous, bar graph, electrical conductor, electrical insulator, limitations, scientific diagram, acoustic absorption

Light – Theatre Lighting Technicians

Light, source, dark, shadow, block, absorb, direct/direction, transparent, opaque, translucent, straight, direction, colour, reflect, cone, eye, spectrum, rainbow, reflective materials, reflection, angle of incidence/reflection, beam, scatter, distort, convex, concave, plane, ray, bent, focal point, refraction, names of light sources, reflective, mirror,

REVISION - Medical Manoeuvres

Life cycle, metamorphosis (complete/incomplete), egg, instar, larvae, pupae, disease, medicine, drug, environmental factors, side effects, property, prediction, accuracy, comparative, fair test, enquiry, causal relationships, support/refute, development, child, adolescence, puberty, reproduction, elderly, adult, growth, change, timeline, diet, exercise, lifestyle, health, drugs, addiction, blood, blood vessels, arteries, veins, capillaries, heart, pump, oxygen, carbon dioxide, circulation, circulatory system, nutrients, water, shadow, light source, beam, ray diagram, dilation, electricity, electrical circuit, complete circuit, circuit symbol, components, cell, battery, positive/negative, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, voltage, current, conductor, insulator

Properties and changes of materials - Special Effects Materials

Enquiry, solid, liquid, gas, dissolve, soluble, solute, solution, insoluble, heterogeneous/homogeneous mixture, colloid, suspension, reversible, irreversible, changes of state, evaporation, sieving, filtering, heating/cooling, variables, precision, line graph, bar chart, accuracy, reaction, reactant, non-reversible, rust, oxidation, experimental

Earth and Space – SPACE!
Heliocentric, geocentric, spherical, solar system, astrology, enquiry, evidence, star, moon, planet, sun, Earth, Galileo, Copernicus, scale, planet names, orbit, sundial, shadow, axis, day, night, time-zone, Greenwich Meantime, eclipse, light, reflection, telescope, satellite, tide, mass, gravity, phase, lunar, direct/indirect light, equinox, solstice, season, hemisphere, longitude, latitude, proof, theory, hypothesis, argument, idea, fact

Forces – Welcome to Forceland
Support, fall, Earth, gravity, balancing force, resistance force, weight, Newtons, elasticity, variables, friction, air resistance, causal relationship, air resistance, moving surfaces, speed, water resistance, up thrust, precision, mechanisms, levers, pulleys, transfers, force, mechanisms, gears

Living things and their habitats – The Classification Code
classification, kingdom, phylum, class, order, family, genus, species, Linnaeus, opinion, characteristics, classification key, similarities, differences, group, observations, support, refute, branching classification key, botanical illustration, micro-organism, organism, taxonomy

Evolution and inheritance – Survival of the fittest
offspring, characteristics, vary/variation, inherit/inheritance, environmental variation, suited/suitable, environment, adaptation, natural selection, evolution, adapted, fossils, theory, opinion, cladogram

REVISION – Sensational Science
mixture, solution, inert, reversible, irreversible, acid, alkaline, oxidation, carbon dioxide, copper oxide, tarnished, physical reaction, chemical reaction, heliocentric, geocentric, spherical, solar system, astronomy, enquiry, evidence, star, moon, planet, sun, Earth, planet names, orbit, axis, day, night, eclipse, telescope, satellite, tide, mass, gravity, phase, lunar evidence, season, proof, theory, hypothesis, argument, idea, fact, force, gravity, friction, air pressure, inertia, Newton, push, pull, classification, kingdom, phylum, class, order, family, genus, species, Linnaeus, opinion, characteristics, adaptation, environmental factor, evolution, extinction, survival of the fittest, debate, evidence, dispute, reliable, unreliable, experimentation, theorisation

The Assessment Tracker documents below outline what children will learn within each topic

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: Living things and their Habitats – Illustrating Life Cycles												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
record 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												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
identify scientific evidence that has been used to support or refute ideas or arguments												
Make a detailed Linnaean illustration of a flowering plant using watercolour pencils												
Research the lifecycle and reproduction of a flowering plant												
Dissect and label the parts of a complex flower, identifying the male and female gametes												
Identify and explain the ways that plants reproduce asexually, both naturally and artificially												
Draw botanical illustrations of asexually reproducing plants, using watercolour pencils												
Set up a 'fair' investigation into artificial asexual reproduction in flowering plants												
Draw zoological illustrations of the life cycles of two insects and two amphibians Research the life cycle of insects and amphibians noting that they reproduce sexually												

Record and present key features of insect and amphibian life cycles in a table												
Identify a local mammal and bird species and research their lifecycles online												
Draw and annotate a life cycle zoological illustration for both mammal and bird life cycles												
Identify possible challenges of scientifically gathering information on life cycles												
Identify adaptations that relate directly to reproduction												
Make observations, record findings and draw conclusions, as natural scientists												
Research & record the scientific significance of the work of known naturalists & animal behaviourists												

Topic specific vocabulary: Living things and their Habitats – Illustrating Life Cycles Lifecycles

gamete	stamen	stigma	carpel	pistil	pollination	asexual reporoduction	sexual reproduction	life cycle	seed
pollen	anther	filament	style	ovary	botanical	illustration	dissection	corm	bulb
spores	cutting	fern	moss	liverwort	tubers	asexual	Non-flowering	propagation	artificial
metamorphisis	amphibian	insect	mammal	bird	gestation	foetus	sperm	uterus	chick
egg	baby	adult	reproduction	natural scientist	naturalist	observation	conservation	endangered	flowering

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: Properties and changes in materials - Materials Consultants												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
Identify scientific evidence that has been used to support or refute ideas or arguments												
Sort and match properties of materials to uses, offering reasons												
Record properties of materials in a given table and match to uses												
Sort and identify properties of materials, offering reasons for suggested possible uses												
Present properties and related uses of materials in the form of a table and scatter graph												
Identify what a thermal conductor and thermal insulator are												
Plan and set up an investigation independently to identify thermal insulators, demonstrating understanding of a fair test and suggesting ways to record findings												
Select the best materials to make bags and storage jars that are fit for purpose												

Plan and set up an investigation into the strength of various papers, presenting findings												
Research the properties of glass and plastic and relate to their use as food storage materials												
Make recommendations for materials suitable for outdoor tables												
Plan and set up investigations to test a range of materials for their suitability for table top												
Record and present findings in a suitable graph/table												
Identify materials that do and do not conduct electricity												
Plan, set up and present findings from a fair test investigation looking at the electricity conducting properties of materials												
Compare thermal and electrical conduction												
Plan and carry out an investigation into the sound proofing properties of given materials												
Create and present a labelled diagram that identifies the best materials for ear plugs explaining scientific reasons for choices												

Topic specific vocabulary: Properties and changes in materials - Materials Consultants

opinion	fact	comparative	fair test	scatter graph	enquiry	use	reasoning	insulator	conductor
thermal	prediction	accuracy	line graph	variable	precision	comparable	strength	transparent	opaque
absorption	hardness	porous	non-porous	bar graph	electrical	acoustic absorption	flexibility	limitations	scientific diagram

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: Animals including humans - The Human Species												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
identify scientific evidence that has been used to support or refute ideas or arguments												
present the key stages of human foetal development as a labelled diagram												
create fact-file tables on growth in children												
Identify and present the key physical & emotional changes during male and female puberty												
Create a labelled photography display/timeline showing the key events of a human's life and the physical & mental changes as they age.												
Identify the impact of a heathy or unhealthy diet on the human body												
Identify the impact of exercise and lifestyle choices on the human body												
Identify the effects of drugs on the human body												
Identify, describe and note the functions of the main components of blood												

Investigate & recreate heart rates for varying levels of exertion, explaining observations												
Explain the circulatory system explaining how it works and the role blood has within this												
Investigate diffusion and osmosis												
Explain how nutrients and water are transported through the body												

Topic specific vocabulary: Animals including humans - The Human Species

relationship	support/refute	gestation	life cycle	sperm	egg	foetus	development	child	adolescence
adolescent	puberty	teenager	reproduction	penis	scrotum	heart	testicles	genitals	childhood
erection	babyhood	period	adult	wet dream	pubic hair	ejaculation	menarche	pregnancy	uterus/womb
clitoris	foreskin	contraceptive	vagina	menstruation	aging	old age	elderly	growth	change
death	timeline	diet	exercise	lifestyle	health	dugs	addiction	disease	medicine
alcohol	cigarettes	stimulant	depressant	analgesic	hallucinogen	blood	blood vessels	arteries	veins
capillaries	causal relationships	pump	oxygen	carbon dioxide	circulation	circulatory system	nutrients	water	sperm tube (vas deferens)

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: LIGHT - Theatre Lighting Technicians												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
record results using scientific diagrams and labels, tables, scatter graphs, bar and line graphs												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
identify scientific evidence that has been used to support or refute ideas or arguments												
Plan & carry out an investigation into shadow size & shape, and the angle of the light source												
Create diagrams that show how shadows change when the angle of the light source changes												
Be able to explain why shadows may have ‘shades’ in them												
Investigate and explain through instructions how colour and texture are created in shadows												
Modify a shadow ‘puppet’ to create specified colour and texture effects												
Explain how the colour we see is the result of specific ‘parts’ of light being reflected												
Split white light into a rainbow spectrum using bubbles and water												
Investigate the effect of coloured light on the colour of objects												
Investigate the effectiveness of various reflective surfaces												

Draw and note angles of incidence and reflection												
Know that the angle of incidence is equal to the angle of reflection when predicting beam journeys and drawing scientific diagrams												
Investigate convex, concave and plane mirrors, noting the effects												
create diagrams to show the effect of convex, concave and plane mirrors												
Know that when light is slowed down it bends												
Review information on light, offering opinion and ideas as well as asking scientific questions												

Topic specific vocabulary: LIGHT - Theatre Lighting Technicians

light	source	dark	shadow	block	absorb	direction	reflective
straight	direction	colour	reflect	cone	ray	spectrum	rainbow
reflection	angle of incidence	angle of relfection	beam	scatter	distort	convex	plane
focal point	refraction	mirror	bent	materials	translucent	opaque	transparent

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: Electricity – Electric Art												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
record results using scientific diagrams and labels												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
identify scientific evidence that has been used to support or refute ideas or arguments												
Plan and carry out a series of age appropriate electrical circuit investigations												
Carry out a series of enquiries that explore the effects of voltage on simple and parallel electrical circuit components												
Draw a circuit diagram with a summary of the brightness, volume and speed of components within it												
Annotate circuit diagrams with explanations of how components work & the role of resistance in this												
Investigate and develop a dimmer switch												

Create a working electrical prototype and identify possible improvements												
Effectively use appropriate materials, tools and equipment												
Explain clearly how components work including resistance												
Explain clearly the effect that different voltages have on components in a circuit												
Demonstrate electrical knowledge and skills through presentation												

Topic specific vocabulary: Electricity – Electric Art

electricity	findings	resistance	circuit symbol	components	cell	battery	positive	negative	connect
connection	investigation	wire	crocodile clip	bulb	bright	dim	switch	buzzer	volume
motor	faster	slower	voltage	current	conductor	insulator	metal	Non-metal	enquiry
loose connection	electrical circuit	complete circuit	scatter gram	causal relationship	circuit diagram	symbol	appliances	device	flow

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: REVISION - Medcal Manoeuvres												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
identify scientific evidence that has been used to support or refute ideas or arguments												
Research and draw the life cycle of a mosquito												
Link scientific knowledge of insect life cycles to factors that would interrupt it and when												
understand that medicines often have unpleasant side effects on the body, but are worth the overall impact of the drug												
Investigate a range of materials for specific properties												
Recommend the best materials for a given use, identifying possible alternative materials												
Recap and research the human life cycle												
Recap and research the impact of drugs, alcohol, lifestyle, diet and exercise on health												
Create an informative leaflet outlining the human life cycle and advising people on how to live a healthy life												
Identify the key processes involved in the human circulatory system												

Suggest ways to maintain a healthy circulatory system												
Suggest why different light sources are fit for purpose by drawing a ray diagram												
Design and draw an accurate circuit diagrams (series and parallel circuit)												
Make an electrical circuit from a circuit diagram												

Topic specific vocabulary: REVISION - Medical Manouevres

life cycle	metamorphosis	egg	instar	larvae	pupae	disease	medicine	drug	side effects
comparative	nutrients	support	refute	puberty	adolescence	reproduction	timeline	diet	lifestyle
health	addiction	blood vessels	arteries	veins	capillaries	pump	oxygen	cell	circulation
circulatory system	causal relationships	shadow	light source	dilation	ray diagram	circuit symbols	carbon dioxide	battery	positive
negative	current	conductor	insulator	circuit	switch	clip	bulb	motor	wire

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: Properties and changes of materials - Special Effects Materials												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
identify scientific evidence that has been used to support or refute ideas or arguments												
Plan and carry out investigations into the mixing and heating/cooling of solids & liquids												
Use sieving, filtration, evaporation and changes in temp. to reverse changes												
Record and outline methods and findings, including graphs, in the form of a technician's brief												
Plan and carry out several investigations into solubility of different sugar forms exploring different solvents and temperatures												
Measure volume and temperatures accurately, taking multiple readings to ensure accuracy												
Record findings in tables, graphs and diagrams												
Make observations of non-reversible chemical reactions												
Suggest explanations for and by-products of non-reversible chemical reactions												

Plan and carry out investigations into conditions needed for rusting												
Observe rusting over time, recording findings and suggesting optimum conditions for rusting												
Know about some famous materials inventors												
Research and record information about new materials and their possible uses												

Topic specific vocabulary: Properties and changes of materials - Special Effects Materials

enquiry	solid	liquid	gas	dissolve	soluble	solute	solution
homogeneous	mixture	colloid	suspension	reversible	irreverisble	changes of state	evaporation
heating	cooling	variables	precision	line graph	bar chart	accuracy	reaction
oxidation	experimental	hetrogeneous	sieving	insoluble	filtering	non-reversible	rust

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: Earth and Space – SPACE!												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
identify scientific evidence that has been used to support or refute ideas or arguments												
Know that Galileo's heliocentric view of the solar system was radical for its time												
Research the key facts/evidence about scientific statements about space												
Suggest enquiry questions for a series of statements about the Earth, Sun & Moon												
Suggest possible scientific approaches to investigating enquiry questions												
Use fruit or other objects to create a model of the solar system, calculating scales and ratios for the solar system												
Research, collate & create graphs for data about the planets												
Compare & draw conclusions from online images of our night sky at different times of year												
Explore time zones and relate this to the movement of the Earth												

Plan and carry out shadow investigations that help support the idea that the Earth moves on its axis												
Match lunar phases to relative positions of the Moon, Sun and Earth												
Label key features of the moon												
Research the relationship between the moon and the Earth's tides												
Explore time zones and relate these to the movement of the Earth, solving time problems												
Analyse data to explain seasonal changes to day length, and link to the Earth's tilt & solar orbit												
Create a poster that presents findings and arguments for a heliocentric solar system												
Argue why Galileo's findings should be accepted, based on scientific evidence												

Topic specific vocabulary: Earth and Space – SPACE!

Heliocentric	geocentric	spherical	Solar system	astrology	enquiry	evidence	star	moon
sun	Earth	Galileo	Copernicus	scale	argument	orbit	sundial	shadow
day	night	Time-zone	Greenwich Meantime	eclipse	light	reflection	telescope	satellite
mass	gravity	phase	Direct/indirect light	lunar	equinox	solstice	season	hemisphere
proof	theory	hypothesis	planet names	tide	fact	axis	Longitude	planet

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: Forces – Welcome to Forceland												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
identify scientific evidence that has been used to support or refute ideas or arguments												
Identify and label gravity and resistance forces, identifying balanced and unbalanced forces												
Plan and carry out an investigation into the forces at play in a bungee jump												
Select or compose guidance for H&S on a bungee jump, based on investigation findings												
Investigate the effect of ground friction on the force needed to move a rolling car, taking accurate measurements and recording data effectively												
Recommend a ground covering that creates the right level of friction for the safe (but fun) movement of a rolling car on a ride												
Draw a diagram showing how forces act on a rolling car												
Set up and carry out a guided parachute investigation exploring shape, size and string length												

Recommend parachute material, size and string length in the form of a diagram & record sheet												
Investigate and suggest which shape of boat is best to beat the water resistance of a canyon ride river												
Draw diagrams showing the effect of water and air resistance												
Complete a lever investigation, noting how the position of the fulcrum impacts on its effectiveness												
Complete a pulley investigation noting the correlation between effort required & the number of pulleys												
Draw diagrams showing the forces, loads, weights and efforts for levers and pulleys												
Investigate how gears work, identify gear ratios and select possible outcomes from given gear ratios												

Topic specific vocabulary: Forces – Welcome to Forceland

support	causal relationship	Earth	gravity	balancing force	weight	Newtons	gears
friction	moving surfaces	speed	levers	resistance force	transfers	up thrust	force
pulleys	water resistance	precision	mechanisms	air resistance	fall	elasticity	variables

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: Living things and their habitats – The Classification Code												
Pupils:												
Targets Children can/know/explain/understand:												
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations												
identify scientific evidence that has been used to support or refute ideas or arguments												
Know who Linnaeus was and learn about his classification system												
Create and explore classification routes for given living things, identifying relatedness												
Note and identify similarities and differences between animals, micro-organisms and plants												
Group animals and plants into broad groups then sub groups according to observable features												
Create a feature-led sweet classification system												
Design and test out a classification key for birds, bees or butterflies												
Observe and record features and names of leaves found in the local environment												
Design, make and test classification keys to classify leaves found in the local environment												
Write scientific descriptions of unusual living things from around the world												
Classify unusual living things using their descriptions and online research												
Design, describe, name and sketch a new creature that sits within a known classification route												
Attempt to identify where ‘new’ creatures sit within the Animalia classification system												

Topic specific vocabulary: Living things and their habitats – The Classification Code

classification	kingdom	phylum	class	order	genus	species
classification key	similarities	differences	group	observations	support	refute
botanical illustration	Micro-organism	organism	taxonomy	characteristics	branching	Linnaeus

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: Evolution and inheritance – Survival of the fittest												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and 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												
Play class Guess Who and note characteristics that are inherited, noting variation												
Research variation across a range of animals and plants												
Identify animal & plant adaptations & suggest advantages or disadvantages of certain characteristics												
Design an animal and a plant that should thrive and survive in a given environment												
Explain how animals and plants might be adapted to extreme environments												
Suggest the impact of a ‘new’ animal and plant on an extreme environment												
Research the life and work of Anning, Darwin or Wallace and share as a presentation												
Use given evidence to attempt to back up evolutionary ideas, presenting logical findings												

Complete online exploration of the evolution of flight in birds through the fossil record												
Create a cladogram using modern animals												
Explain scientifically how a given creature has evolved in terms of a specific characteristic												

Topic specific vocabulary: Evolution and inheritance – Survival of the fittest

offspring	characteristics	vary	variation	inherit	inheritance	Environmental variation	suited	suitable
environment	adaptation	theory	evolution	adapted	fossils	natural selection	cladogram	opinion

SCIENCE: KS2 – Assessment tracker: Year 5 & 6												
Topic: REVISION – Sensational Science												
Pupils:												
Targets Children can/know/explain/understand:												
plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary												
take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate												
record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs												
use test results to make predictions to set up further comparative and fair tests												
report and present findings from enquiries, including conclusions, causal relationships and explanations of and 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												
Plan and carry out investigations to observe the reaction of given solids in given liquids or mixture												
Make and record observations, suggesting reasons for their observations												
Create a timeline of knowledge development for some key areas of astronomy												
Complete research on specific space discoveries												
Note that scientific knowledge continues to evolve and that scientists don't always agree												
Identify the forces behind a range of phenomena												
Carry out investigations into the ways in which forces create unexpected effects												
Explore some scientifically challenging living things to classify												
Research living things that have been re-classified as scientific knowledge about them has developed (Yr5&6)												

Research creatures and plants that demonstrate extreme evolution, identifying key adaptations												
Define the term extinction and note whether it is a useful term												

Topic specific vocabulary: REVISION – Sensational Science

mixture	solution	inert	reversible	irreversible	acid	alkaline	oxidation	carbon dioxide
heliocentric	tarnished	geocentric	spherical	solar system	astronomy	enquiry	satellite	physical reaction
telescope	gravity	evidence	tide	mass	phase	lunar	season	copper oxide
proof	theory	hypothesis	argument	force	inertia	Newton	push	chemical reaction
pull	classification	evolution	extinction	kingdom	phylum	genus	species	air pressure
adaptation	debate	order	family	Earth	axis	eclipse	survival of the fittest	