Science

Progression of knowledge, skills and understanding: Key Stage 1

** Science in KS1 is taught on a rolling programme over two years. Other than, 'working scientifically', both classes teach the same units during year A and then both classes teach the same units during year B. **

Class 1	Class 2
Working scientifically – to run through all units <u>Observing and recording</u> Make observations using appropriate senses. Record observations. Communicate observations orally, in drawing, labelling, simple writing and using ICT. <u>Planning communication and sources</u> Draw simple pictures. Talk about what they see and do. Use simple charts to communicate findings. Identify key features ask questions. <u>Enquiring and Testing and Obtaining and Presenting Evidence:</u> Test ideas suggested to them say what they think will happen. Use first-hand experiences to answer questions. Begin to compare objects and living things.	**Working scientifically – to run through all units** <u>Observing and recording</u> Respond to questions asked by the teacher. Ask questions collect and record data (supported by the teacher). Suggest how they could collect data to answer questions. Begin to use equipment from a limited range. <u>Planning communication and sources</u> Describe their observations using some scientific vocabulary. Use a range of simple texts to find information. Suggest how to find things out. Identify key features ask questions. <u>Enquiring and Testing and Obtaining and Presenting Evidence:</u> Use simple equipment provided to aid observation. Compare objects, living things or events. Make observations relevant to their task.

	Begin to recognise when a test or comparison is unfair. Use first-hand experiences to answer questions.

YEAR A

Autumn

Chemistry: Everyday materials (Y1)
Describe materials using their senses.
Describe materials using their senses, using specific scientific words.
Explain what material objects are made from.
Explain why a material might be useful for a specific job.
Name some different everyday materials - e.g., Wood, plastic, metal, water and rock.

Sort materials into groups by a given criteria.
Describe the simple physical properties of a variety of everyday materials.
Compare and group together a variety of materials based on their simple physical properties.
Describe the properties of different materials using words like, transparent or opaque, flexible, etc.
Sort materials into groups and say why they have sorted them in that way.
Say which materials are natural and which are man-made.

VOCAB: object, material, wood, plastic, metal, fabric, water, glass, paper, stone, brick, hard, soft, stretchy, bendy, absorbent, waterproof, shiny, dull, rough, opaque, transparent

Scientist – William Addis – Toothbrush Inventor

Working Scientifically – Enquiry ideas and types

Comparative tests	Identify and classify	Observation over time	Pattern Seeking	Research
• Which materials are the most flexible? • Which materials are the most absorbent?	• We need to choose a material to make an umbrella. Which materials are absorbent?	• What happens to materials over time if we bury them in the ground? • What happens to shaving foam over time?	• Is there a pattern in the types of materials that are used to make objects in school?	• How are bricks made? • Which materials can be recycled?

Spring 1

Biology: Plants (Y2)
Describe the parts of a plant (roots, stem, leaves, flowers).
Describe what plants need to survive.
Observe and describe how seeds and bulbs grow into mature plants.
Find out & describe how plants need water, light and a suitable temperature to grow and stay healthy.
Describe what plants need to survive and link it to where they are found. Explain that plants grow and reproduce in different ways.

VOCAB: buds, bulbs, deciduous, evergreen, trunk, vegetable, fruit, wild plants, environment, blossom, petals, branches

Scientist – Alan Titchmarsh – Botanist and gardener

Working Scientifically – Enquiry ideas and types

Comparative tests	Identify and classify	Observation over time	Pattern Seeking	Research
• Do cress seeds grow quicker inside or outside?	• How can we identify the trees that we observed on our tree hunt?	• What happens to my bean after I have planted it?	• Do bigger seeds grow into bigger plants?	• How does a cactus survive in a desert with no water?

Spring 2
Biology: Seasonal Change (Y1)

Observe changes across the four seasons.
Name the four seasons in order.
Observe and describe weather associated with the seasons.
Observe and describe how day length varies.
Observe features in the environment and explain that these are related to a specific season.
Observe and talk about changes in the weather.
Talk about weather variation in different parts of the world.

VOCAB: autumn, spring, summer, winter, weather, temperature, thermometer, weather symbol

Scientist – Holly Green – Meteorologist

Working Scientifically – Enquiry ideas and types

Comparative tests	Identify and classify	Observation over time	Pattern Seeking	Research
• In what season does it rain the most?	• How could you organise all the objects of the solar system into groups?	• How does the colour of a UV bead change over the day?	• Does the wind always blow the same way?	• Are there plants that are in flower every season? What are they?

Summer

Biology: Animals, including humans (Y1)
Point out some of the differences between different animals.
Sort photographs of living things and non-living things.
Identify and name a variety of common animals - (birds, fish, amphibians, reptiles, mammals, invertebrates).
Describe how an animal is suited to its environment.
Identify and name a variety of common animals that are carnivores, herbivores, and omnivores.
Name the parts of the human body that they can see.
Draw & label basic parts of the human body.
Identify the main parts of the human body and link them to their senses.
Name the parts of an animal's body.
Name a range of domestic animals.
Classify animals by what they eat - (carnivore, herbivore, omnivore).

VOCAB: fish, amphibians, insects, reptiles, birds, mammals, carnivore, herbivore, omnivore, tame, nocturnal

Scientist – **Chris Packham** – Conservationist

Working Scientifically – Enquiry ideas and types

Comparative tests	Identify and classify	Observation over time	Pattern Seeking	Research
• Is our sense of smell better when we cannot see?	• How can we organise all the zoo animals? • What are the names for all the parts of our bodies?	• How does my height change over the year?	• Do you get better at smelling as you get older?	• Do all animals have the same senses as humans?

YEAR B

Autumn

Chemistry: Use of everyday materials (Y2)
Describe materials using their senses.
Describe materials using their senses, using specific scientific words.
Explain what material objects are made from.
Describe the simple physical properties of a variety of everyday materials.
Describe the properties of different materials using words like, transparent or opaque, flexible, etc.
Name some different everyday materials - e.g., Wood, plastic, metal, water, and rock.

Explain how solid shapes can be changed by squashing, bending, twisting, and stretching.
Explore how the shapes of solid objects can be changed - (squashing, bending, twisting, stretching).
Find out about people who developed useful new materials - (John Dunlop, Charles Macintosh, John McAdam).
Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses.
Explain how things move on different surfaces.
Explain how materials are changed by heating and cooling.
Explain how materials are changed by bending, twisting, and stretching.

VOCAB: metal, plastic, wood, squash, bend, twist, stretch

Scientist – Charles Macintosh – Waterproof material

Working Scientifically – Enquiry ideas and types

Comparative tests	Identify and classify	Observation over time	Pattern Seeking	Research
• Which shapes make the strongest paper bridge?	• Which materials will float, and which will sink?	• How long do bubble bath bubbles last for?	• How do materials change with heat? (Leave outside in sunshine/windowsill/radiator)	• How have the materials we use changed over time?

• Which material would be best for the roof of the little pig's house?	• Which materials will let electricity go through them, and which will not? • Which materials are shiny, and which are dull?	• What will happen to our snowman?	• How does the amount of water affect the strength of a kitchen towel?	• How are plastics made?

Spring 1

Biology: Plants (Y1)
Describe what plants need to survive.

Name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant.
Identify and name a range of common plants and trees.
Recognise deciduous and evergreen trees.
Name the trunk, branches, and root of a tree.
VOCAB: roots, crown, deciduous, evergreen, blossom

Scientist – Beatrix Potter – Botanist

Working Scientifically – Enquiry ideas and types

Comparative tests	**Identify and classify**	**Observation over time**	**Pattern Seeking**	**Research**
• Which type of compost grows the tallest sunflower? • Which tree has the biggest leaves?	• How can we sort the leaves that we collected on our walk?	• How does a daffodil bulb change over the year? • How does my sunflower change each week? • How does the oak tree change over the year?	• Do trees with bigger leaves lose their leaves first in autumn? • Is there a pattern in where we find moss growing in the school grounds?	• What are the most common British plants and where do we find them? • How did Beatrix Potter help our understanding of mushrooms and toadstools?

Spring 2

Biology: Animals, including humans (Y2) *(carry into summer term if needed)*
Describe what animals need to survive.
Identify and name a variety of common animals - (birds, fish, amphibians, reptiles, mammals, invertebrates).
Identify and name a variety of common animals that are carnivores, herbivores, and omnivores.

Explain that animals grow and reproduce.
Explain why animals have offspring which grow into adults.
Describe the life cycle of some living things - (e.g., Egg, chick, chicken).
Explain the basic needs of animals, including humans for survival - (water, food, air).
Describe why exercise, balanced diet and hygiene are important for humans. Explain that animals reproduce in different ways.

VOCAB: off-spring, survival, healthy, hygiene, exercise, nutrition, diet, proteins, carbohydrates, fats

Scientist – **Elizabeth Garrett** – First British female physician and surgeon

Working Scientifically – Enquiry ideas and types

Comparative tests	Identify and classify	Observation over time	Pattern Seeking	Research
• Do amphibians have more in common with reptiles or fish? • Do bananas make us run faster?	• Which offspring belongs to which animal? • How would you group things to show which are living, dead, or have never been alive?	• How does a tadpole change over time? • How much food and drink do I have over a week?	• Which age group of children wash their hands the most in a day?	• What food do you need in a healthy diet and why? • What do you need to do to look after a pet dog/cat/lizard and keep it healthy?

Summer

Biology: Living things and their habitats (Y2)
Match certain living things to the habitats they are found in.
Explain the differences between living and non-living things.
Describe some of the life processes common to plants and animals, including humans.
Decide whether something is living, dead or non-living.
Describe how a habitat provides for the basic needs of things living there.
Describe a range of different habitats.
Describe how plants and animals are suited to their habitat.
Name some characteristics of an animal that help it to live in a particular habitat.
Describe how animals obtain their food from plants and other animals, using a simple food chain.
Identify and name different sources of food.

VOCAB: dinosaur, indigenous, rivers, woodland, ponds, sea, rainforest, desert, species, microhabitats, food chain

Scientist – Liz Bonnin – Conservationist

Working Scientifically – Enquiry ideas and types

Comparative tests	Identify and classify	Observation over time	Pattern Seeking	Research
• Which pets are the easiest to look after? • Is there the same level of light in the evergreen wood compared with the deciduous wood?	• How would you group these plants and animals based on what habitat you would find them in?	• How does the school pond change over the year?	• What conditions do woodlice prefer to live in? • Which habitat do worms prefer – where can we find the most worms?	• How are the animals in Australia different to the ones that we find in Britain? • How does the habitat of the Arctic compare with the habitat of the rainforest? • What ideas did botanist Arthur Tansley have about habitats in 1935?