Science Year 1 Skills and knowledge documents to support

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Animals including humans Sensitive bodies	**Plants** Introduction to plants	**Forces, Earth and Space** Seasonal changes	**Materials** Everyday materials	**Animals including humans** Comparing animals	**Making connections** Making connections with stories

Progression of Working Scientifically Skills

	EYFS	Year 1	Year 2	Year 3	Year 4
Posing questions	Noticing the world around me. Asking questions about the natural world with support.	**Asking simple scientific questions and noticing that questions can be answered in different ways.** **Exploring the world around them and raising their own simple questions.** **Recognising there are different types of enquiry (ways to answer a question).** **Responding to suggestions on how to answer questions.**		Asking my own scientific questions & using different ways to answer them. Beginning to raise further questions during the enquiry process. Considering what makes a testable question. Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered.	
Planning	Beginning to talk about what I can do and try my ideas.	**Planning how to find things out with help (including planning tests)**		Able to plan tests (inc. fair tests) with help.	
Predicting	Beginning to make guesses about what might happen.	**Suggesting what might happen, often justifying with personal experience.**		Making predictions about what they think will happen by: ● Using scientific Knowledge and/or personal experience to explain their prediction (because…) ● Beginning to consider cause and effect when making predictions, where appropriate. ● Predicting a trend by considering how the changing variable will affect the measured variable. (The smoother the surface, the longer the distance the car will travel)	
Observing (Qualitative)	Observing the natural world around them.	**Able to observe, describe & compare.**		Able to observe, describe & compare using scientific language.	

	Talking about what they can see. Commenting on what they see and hear in the natural world.	**Using their senses to describe, in simple terms, what they notice or what has changed.**	Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed.
Measuring (Quantitative)	Beginning to use equipment within my play (non-standard measures) Using non-standard units to measure.	**Able to measure using non-standard and standard measures e.g. rulers, metre sticks, trundle wheels, weighing scales, balance scales)** **Using non-standard units to measure and compare.** **Beginning to use standard units and read simple scales to measure and compare.** **Beginning to use simple measuring equipment to make approximate measurements.**	Able to use a variety of equipment to measure accurately (such as data loggers, newton meters, weighing scales, thermometers, stopwatches, rules, metre sticks, trundle wheels, measuring cylinders) Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers.
Researching	Recognising that information can be found online and in books.	**Gathering specific information from one simplified, specified source.**	Gathering specific information from a variety of sources.

<table>
<tr><td colspan="4">Y1: Autumn 1</td></tr>
<tr><td colspan="4">Animals Including Humans : Sensitive Bodies</td></tr>
<tr><td colspan="4">Enquiry question:</td></tr>
<tr>
<td>Prior learning:

Nursery - Use all their senses in hands-on exploration of natural materials

Reception - Name and describe people who are familiar to them.

Future learning:

Y6 Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.

Give reasons for classifying plants and animals based on specific characteristics.</td>
<td>Knowledge:

• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
• Know key parts of the human body (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth).
• Recall the five main senses: sight, smell, hearing, taste and touch.
• Understand that the skin is used for touch, the tongue is used for taste, the nose is used for smell, the eyes are used for sight and the ears are used for hearing.</td>
<td>Skills:

∉ Recognising there are different types of enquiry (ways to answer a question).
∉ Using their senses to describe, in simple terms, what they notice or what has changed.
∉ Using non-standard units to measure and compare.
∉ Drawing and labelling simple diagrams.
∉ Using a prepared table to record results including numbers and simple observations.
∉ Grouping based on visible characteristics.
∉ Using their results to answer simple questions.</td>
<td>Vocabulary:

• <u>Human and animal body parts:</u> e.g. body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, hands, feet, tail, wings, feathers, fur, beak, fins, gills.
• <u>Human senses:</u> sight, hearing, touch, smell, taste.
• <u>Exploring senses:</u> loud, quiet, soft, rough.</td>
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<tr>
<td colspan="2">Critical Content Statements:

• I can point to and name parts of the human body (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth).</td>
<td colspan="2">Common Misconceptions Pupils May Have:

Some children may think:</td>
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</table>

• Humans have five senses named sight, smell, hearing, taste and touch. • We use our skin for touch. • Our tongue is used to taste. • The nose is used for smell. • Our eyes are used for sight/help us to see. • We use our ears to hear.	• humans are not animals

<table>
<tr><th colspan="4">Y1: Autumn 2</th></tr>
<tr><td colspan="4">Plants: Introduction to Plants.</td></tr>
<tr><td colspan="4">Enquiry question: What plants are growing here?</td></tr>
<tr>
<td>Prior learning:
Nursery - Plant seeds and care for growing plants.
Understand the key features of the life cycle of a plant and an animal.
Begin to understand the need to respect and care for the environment and living things.
Reception - Explore the natural world around them.
Recognise some environments that are different to the ones in which they live.

Future learning:
Y2 Plants - observe and describe how seeds and bulbs grow into plants. Find out how plants need water, light and suitable temp to grown and stay healthy. Identify and name plants and animals in their habitats.
Y3 plants - Identify and describe parts of a plant (roots, stem/trunk, leaves and flowers)
Investigate how water is transported in plants.</td>
<td>Knowledge:
Identify and name a variety of common wild and garden plants and describe how they differ.

Identify and describe the basic structure of a variety of common flowering plants, including trees.

Know that deciduous trees lose their leaves seasonally, but evergreen trees do not.

Identify and describe the basic structure (including leaves, flowers (blossom), fruit, roots, bulb, seed, trunk, branches, stem) of a variety of common plants, including flowering plants and trees.

To begin to understand how plants grow and change over time.</td>
<td>Skills:
Raise questions about plants and respond to suggestions on how to set up an investigation to answer a question.
Use a magnifying glass to observe the different parts of flowering plants.
Draw and label a diagram of a flowering plant.
Use an identification chart to name flowering plants.
Sort plants into groups based on specific criteria.
Use non-standard units to measure leaf length.
Recognise similarities and differences in seeds and bulbs.
Recognise that predictions do not always match observations.
Identify which plant parts can be eaten.
Recognise that scientific research into plants leads to important discoveries.</td>
<td>Vocabulary:

• Names of common plants: wild plant, garden plant, evergreen tree, deciduous tree, common flowering plant, weed, grass.
• Name some features of plants: e.g. flower, vegetable, fruit, berry, leaf/leaves, blossom, petal, stem, trunk, branch, root, seed, bulb, soil.
• Name some common types of plant: e.g. sunflower, daffodil.</td>
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<td colspan="2">Critical Content Statements:
• Plants have roots, stems, leaves and flowers.</td>
<td colspan="2">Common Misconceptions Pupils May Have:</td>
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• Trees have roots, trunk (stem), branches, leaves, flowers (blossom) and fruits. • Roots take in water from the soil. • The stem holds up the plant and carries water from the roots to the leaves and flowers. • Seeds and bulbs grow into new plants. • The colourful part of a flower is called the petals. • Some plants are deciduous and lose their leaves in autumn. • An evergreen tree keeps its green leaves all year round, even in winter.	Some children may think: • plants are flowering plants grown in pots with coloured petals and a stem. • trees are not plants • all leaves are green • all stems are green • a trunk is not a stem • blossom is not a flower.

<table>
<tr><td colspan="4">Y1: Spring 1</td></tr>
<tr><td colspan="4">Forces, earth and space : Seasonal changes</td></tr>
<tr><td colspan="4">Enquiry question: What happens in this season? How do trees change in different seasons?</td></tr>
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<td>Prior learning:
Nursery – Understand the key features of the life cycle of a plant and an animal
Reception – Explore the natural world around them
Describe what they see, hear and feel whilst outside.
Understand the effect of changing seasons on the natural world around them.

Future learning:
Y3 Light – Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
Y5 Earth and Space – Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the Sun across the sky.
KS3 -The seasons and the Earth’s tilt, day length at different times of year in different hemispheres.</td>
<td>Knowledge:
Know the name and order of the four seasons; spring, summer, autumn and winter.

Know that it is unsafe to look directly at the Sun.

Know the weather associated with the four seasons and how it changes (in the UK).

Understand that day length varies across the four seasons, with fewer daylight hours in the winter and more in the summer.</td>
<td>Skills:
Complete a pictogram and use it to answer simple questions.
Record data about the temperature across the four seasons</td>
<td>Vocabulary:

Seasons: spring, summer, autumn, winter, seasonal change.
Weather: e.g. sun, rain, snow, sleet, frost, ice, fog, cloud, hot/warm, cold, storm, wind, thunder, weather forecast.
Measuring weather: temperature, rainfall, wind direction, thermometer, rain gauge.
Day length: night, day, daylight.</td>
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<tr>
<td colspan="3">Critical Content Statements:
• The earth has four seasons named spring, summer, autumn and winter.
• It is unsafe to look directly at the Sun.
• I can say what the weather is like today.
• I can name different types of weather.
• The weather changes with the seasons in the UK.
• In the UK in winter, there are fewer hours of daylight in a day</td>
<td>Common Misconceptions Pupils May Have:
Some children may think that:
• It always snows in winter
• It is always sunny in summer
• There are only flowers in spring and summer
• It rains most in winter.</td>
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</table>

• In the UK in summer there are more hours of daylight in a day (24 hours)	

Y1: Spring 2			
Materials: Everyday materials			
Enquiry question: The best material goes to.....			
Prior learning: Nursery - Use senses in hands on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the difference between materials and changes they notice. **Future learning:** Year 2 -Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for specific uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**Knowledge:** • Know that object is a word that means an item or thing. • Know that a material is what an object is made from. • 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 based on their simple physical properties. • Know that property refers to how a material can be described. • Describe the physical properties of a variety of everyday materials. • To understand that materials can be grouped based on their physical properties.	**Skills:** ∉ Explore the world around them and raise their own simple questions. ∉ Grouping based on visible characteristics ∉ Draw and label simple diagrams. ∉ Gather specific information from one simplified specified source. ∉ Represent data in block charts and pictograms	**Vocabulary:** Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through, group, material, object, plastic, tough, waterproof, wood

	• Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. • Pupils should explore and experiment with a wide variety of materials, not only those listed in the programme of study, but including for example: brick, paper, fabrics, elastic, foil. • Pupils might work scientifically by: performing simple tests to explore questions, for example: 'What is the best material for an umbrella? … for lining a dog basket? … for curtains? … for a bookshelf? … for a gymnast's leotard?' •		

Critical Content Statements: • Objects are an item or a thing. • A material is what an object is made from. • There are many different materials such as wood, plastic, glass, metal, water and rock. • Properties are the way that materials can be described. • We can observe what is similar and different about materials.	**Common Misconceptions Pupils May Have:** • Only fabrics are materials • Only building materials are materials • Only writing materials are materials • The word 'rock' describes an object rather than a material • 'solid' is another word for hard

• Materials can be grouped based on their physical properties	

Y1: Summer 1			
Animals including humans: Comparing animals			
Enquiry question: What do animals eat?			
Prior learning: Nursery - Use senses in hands on exploration of natural materials. Reception - Name and describe people who are familiar to them **Future learning:** Y2 Living things and habitats – Describe how animal obtain their food from plants and other animals using the idea of a simple food chain and identify and name different sources of food. Y6 Living things and habitats – Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.	**Knowledge:** • Understand how living things change, and that animals have offspring that grow into adults. • Identify which offspring comes from which parent animal. • Know the stages in some animal life cycles. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). • Know the main body parts of common animals (arms, legs, wings, tails, fins, head, trunk, horns/tusks, shell) • Know that a carnivore is an animal that eats other animals and give some examples. • Know that an herbivore is an animal that eats only plants and give some examples. • Know that an omnivore is an animal that eats both animals and plants, and to give some examples. • Name and describe the physical features of a range of animals.	**Skills:** ∉ Explore the world around them and raise their own simple questions. ∉ Group animals based on visible characteristics ∉ Draw and label simple diagrams. ∉ Gather specific information from one simplified specified source. ∉ Use a non-fiction text to find out about specific animals' diets. ∉ Recognise that there are different ways to gather data. ∉ Record data in a block graph and use this to answer questions. ∉ Recognise what the scientist Jane Goodall was known for. ∉ Recall some of Jane Goodall's key findings.	**Vocabulary:** Amphibian, bird, fish, mammals, reptiles, carnivore, herbivore, omnivore, head, body, eyes, ears, mouth teeth, leg, wing, claw, fin, scales, names of animals experienced first hand from each vertebrate group.

	• Sort animals into groups based on their similarities and differences. • Identify characteristics specific to mammals, birds, reptiles, amphibians and fish.		

Critical Content Statements: • Living things change over time. • Animals have babies that grow up into adults. This is called a life cycle. • There are different kinds of animals and they can be grouped based on what they look like. • The animal groups are called fish, amphibians, reptiles, birds and mammals. • Animals can have different body parts that humans don't have. (Some examples are wings, tail, fins, trunk, horns/tusks, shell, hoof, flipper) • An herbivore is an animal that eats only plants. • A carnivore is an animal that eats other animals. • An omnivore is an animal that eats both plants and other animals.	**Common Misconceptions Pupils May Have:** Some children may think: • only four-legged mammals, such as pets, are animals • humans are not animals • insects are not animals • all 'bugs' or 'creepy crawlies', such as spiders, are part of the insect group • amphibians and reptiles are the same.

Y1: Summer 2			
Topic title: Making connections with stories			
Enquiry questions: Do taller trees have wider trunks? Are all mammals the same? Where do animals live? How big are animal footprints? Are birds carnivores, omnivores or herbivores?			
Prior learning:	**Knowledge:** • Identify the typical weather associated with each season.	**Skills:** • Carry out online research to find answers to questions.	**Vocabulary:** Amphibian, bird, carnivore, compare, data, diet, difference, fish, group,

Nursery - Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the environment and living things. Reception - Explore the natural world around them. Recognise some environments that are different to the ones in which they live. **Future learning:** Y2 Plants - observe and describe how seeds and bulbs grow into plants. Find out how plants need water, light and suitable temp to grown and stay healthy. Identify and name plants and animals in their habitats. Y3 plants - Identify and describe parts of a plant (roots, stem/trunk, leaves and flowers) Investigate how water is transported in plants.	• Describe animal features. • Recognise similarities and differences between animals in the same animal group. • Build an animal home with natural materials. • Explain the difference between carnivores, herbivores and omnivores.	• Measure length in centimetres. • Suggest how to carry out a waterproof test. • Begin to recognise if a test is fair. • Use data to answer questions. • Recognise patterns in data. • Group birds according to their diet.	herbivore, mammal, material, object, omnivore, pattern, reptile, season, similarity, trunk, waterproof, weather.

Critical Content Statements:	**Common Misconceptions Pupils May Have:**
• Identify the typical weather associated with each season. • Describe animal features. • Recognise similarities and differences between animals in the same animal group. • Build an animal home with natural materials. • Explain the difference between carnivores, herbivores and omnivores.	Some children may think: