KS1 Science Progression of Knowledge & Skills

Cycle B Progression of Knowledge and Skills

BIG Ideas

1. **There is a relationship between structure and function.**
2. **Living and non-living things can be grouped in a variety of ways.**
3. **Humans move through different stages of growth and development.**
4. **All matter on Earth exists in one of three states: solid, liquid, gas and the state of matter can change.**
5. **Living things have characteristics and requirements for life, growth and health.**
6. **Changing the movement of an object requires a net force (push or pull) to be acting on it.**
7. **Living things depend on each other and on the environment; humans can have both a positive and negative impact.**
8. **The diversity of organisms, living and extinct, is the result of evolution.**
9. **Energy makes things happen and can be seen by its effects; it can be transferred (but is not used up)**
10. **The movement of the Earth affects the seasons and times of day.**

Working Scientifically

These are integrated throughout the Science curriculum and appear in the Progression of Knowledge and Skills for each unit.

Sc2/1.1 asking simple questions and recognising that they can be answered in different ways
Sc2/1.2 observing closely, using simple equipment
Sc2/1.3 performing simple tests
Sc2/1.4 identifying and classifying
Sc2/1.5 using their observations and ideas to suggest answers to questions
Sc2/1.6 gathering and recording data to help in answering questions.

Vocabulary:
Question, observe, test, identify, classify, answer, record, data, Venn diagram, chart, equipment, safety, measure

Plants (Year 1)

BIG IDEA 1. There is a relationship between structure and function.
BIG IDEA 2. Living and non-living things can be grouped in a variety of ways.

Enquiry Questions:

1. What plants do we know and where can we find them?
2. What part of the plant is underground?
3. Can we use a flower to name a plant?
4. Are all tree trunks the same?
5. What are the leaves like on different trees?

Sc1/2.1a identify and name a variety of common wild and garden plants, including deciduous and evergreen trees

I know and name a variety of common wild and garden plants, including deciduous and evergreen trees.
I know that deciduous trees lose their leaves in winter.
I know that evergreen trees keep their leaves all year round.

I can identify and classify plants as garden plants, wild plants, trees or weeds.
I can observe living things over time to monitor changes.
I can plant seeds and monitor growth over time, drawing pictures of different stages of development.
I can observe the parts of a flowering plant closely using simple equipment – magnifying glasses/hand lenses.
I can use string to measure trunks and then order them according to size.
I can identify and classify common trees according to their physical features: leaves, bark, branches, trunk.

I can observe closely using simple equipment – magnifying glasses – to observe features of leaves.
I can choose ways to sort leaves.

Sc1/2.1b identify and describe the basic structure of a variety of common flowering plants, including trees

I know that roots are the part of the plant which is under the ground.
I know how to identify and describe flowers, petals, roots, stems and leaves of flowering plants.
I know the basic structure of trees – trunk, branch, bark, blossom.

I can identify and describe the roots of a plant by observing closely using simple equipment – magnifying glasses/hand lenses.
I can gather and record data (the thickness of a tree trunk) to help answer questions.
I can gather data about the thickness of tree trunks and compare and contrast to understand variation.

Vocabulary:
plants, wild plants, garden plants, weeds, trees, seeds, local plant names, root, shoot, soil, hand lenses/ magnifying glasses, flower, petal, root, stem, leaf/leaves, seeds, common flower names already identified and in the local environment, deciduous, evergreen, leaf/leaves, bark, branches, trunk

Everyday Materials (Year 1)

BIG IDEA 1. There is a relationship between structures and functions.
BIG IDEA 2. Living and non-living things can be grouped in a variety of ways.

Enquiry Questions:

1. What materials are these objects made from?
2. What properties do materials have?
3. What material is best at absorbing water?
4. What material is best at keeping us dry/is waterproof?

Sc1/3.1a distinguish between an object and the material from which it is made

I know that objects are made from materials.

I can sort objects according to the material they are made from.

Sc1/3.1b identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock

I know the name of a variety of everyday materials.

I know that science is about asking questions.

Sc1/3.1c describe the simple physical properties of a variety of everyday materials

I can describe and name the simple physical properties of a variety of everyday materials.

I can ask and suggest answers to one key question: What properties does the material have?
I can use observation of the different materials, suggest answers.

Sc1/3.1d compare and group together a variety of everyday materials on the basis of their simple physical properties

I know what is meant by the term absorbent/not absorbent.
I know what is meant by the term waterproof/not waterproof

I can ask a simple question: What material is best at absorbing water?
I can use observations to suggest what material is best at absorbing water.
I can use simple equipment for measurement – a teaspoon to measure water.
I can measure the water gathered from each material and present this in a pictogram.
I can perform a simple test to find out which material is the most waterproof.
I can draw a conclusion about which material is best for keeping us dry.

Vocabulary:
material, object, wood, plastic, metal, rock, water, object, material, properties, hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; opaque/transparent, absorbent / not absorbent, waterproof/not waterproof

Plants (Year 2)

BIG IDEA 2. Living and non-living things can be grouped in a variety of ways.
BIG IDEA 1. There is a relationship between structures and function.

Enquiry Questions:

1. What Do Plants Grow From?
2. How Do Bulbs and Seeds Grow?
3. What Does a Seed Need to Grow?
4. What Does a Plant Need to Stay Healthy?
5. What Is the Lifecycle of a Plant?

Sc2/2.2a observe and describe how seeds and bulbs grow into mature plants

I know that plants grow from seeds and bulbs.
I know that germination is the process where seeds and bulbs grow into plants.
I know there are three main phases of germination.
I know that the cycle from seed to plant to flower to seed is called a lifecycle.

I can use observations and ideas (about seeds and bulbs) to suggest answers to questions.
I can begin to make predictions.
I can take weekly photos to monitor change over time.
I can begin to develop the idea that we should keep some things the same when planning an experiment.
I can observe seed germination closely; set up a simple test/ investigation following a model.
I can keep a seed diary to track changes.
I can ask simple questions and know that information can be found from secondary sources such as books.
Based on observations over time, I can predict what might happen to the plants in the future.
I can use books/laptops to find out about plant life.

Sc2/2.2b find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

I know that most seeds and bulbs need water to grow.
I know that seeds and bulbs have a store of food inside them
I know that seeds and bulbs need water to germinate.
I know that seeds and bulbs have a store of food inside them.
I know that plants need more things to grow and keep them healthy – water, light, suitable temperature.

I can perform a simple comparative test to see whether seeds need water to grow.
I can suggest answers to questions (What does a seed need to grow?)
I can carry out a simple comparative test to show that plants need water and light to stay healthy.
I can use my observations and ideas to suggest answers to questions.
I can discuss the method together and plan an investigation, with support.

Vocabulary:seed, seed coat, bulb, food store, protect, mature, bulb, roots, seed leaves, shoot, germinate/germination, absorb, nutrients, energy, food supply, temperature, plant, temperature, mature, lifecycle, reproduce (different plant types from research, e.g. dandelions)

Uses of Everyday Materials (Year 2)

BIG IDEA 1. There is a relationship between structure and function.
BIG IDEA 4. All matter on earth exists in one of three states: solid, liquid, gas and the state of matter can change.

Enquiry Questions:

1. What Do We Know About Everyday Materials?
2. Which Material is Best?
3. How Well Do Different Materials Bounce?
4. Can Solid Objects Change Shape?
5. Which Fabric is the Stretchiest?

Sc2/3.1a identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses

I know that everyday objects are made from materials that have different properties.
I know that different materials have properties that make them suitable for specific purposes and uses.
I know the suitability of a variety of everyday materials for different uses (in this case to make a ball bounce).

I can identify and classify the variety of uses of different materials based on their properties.
I can use knowledge of materials to select the correct one for a given purpose.
I can use observation to suggest answers to questions.

I can gather and record data in a simple test to help answer questions – finding out which material makes a ball bounce higher.
I can use tape or wool on the wall to measure the height of bounces.
I can independently identify why it needs to be a fair test and how to ensure this.
I can record results in a table and present them in a bar chart, drawing conclusions against the initial question.

Sc2/3.1b find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

I know the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
I know that the shapes of solid objects made from some materials can be changed by stretching.

I can use my observations and experimentation to suggest answers to questions – can solid objects change shape?
I can record data from observations in a table to help answer questions.
With a partner, I can draw a conclusion about whether a solid can change shape.
I can perform a simple test.
I can make a prediction about which fabric I think will be most stretchy and collectively plan how to test this.
I know that when scientists plan experiments, they try to keep some things the same.
I can use a metre stick to measure the stretchiness of fabric. Use weights to test them.

Vocabulary: property, material, object, suitability, purpose, wood, metal, plastic, glass, brick, rock, paper, Cardboard, strong, waterproof, bounce, grip (sole), solid, squash, bend, twist, stretch, stretchy/not stretchy, fabric, fair test

Seasonal Change (Year 1)

BIG Idea 10. The movement of Earth affects the seasons and times of day.

Enquiry Questions:

1. What is our local area like in each season?
2. Are days always the same length? Is the weather always the same here?

I know there are four seasons: winter, spring, summer and autumn.
I know the order of the seasons.
I know that seasons lead to changes in plants and animal's behaviour.

I can make observations about living things in the local area in each season.

Sc1/4.1b observe and describe weather associated with the seasons and how day length varies

I know that in different seasons, it gets light and dark at different times.
I know that the warmest temperatures are usually in the summer and the coldest in the winter.
I know the changes in weather in each season.

I can compare and contrast the length of the days and the weather in different seasons.
I can summarise each season.

Vocabulary:
season, changes, autumn, winter, spring, summer, weather, sunrise, sunset, weather, temperature

Year 1 Assessment End Points

Plants	
Knowledge	**Skills**
• I understand that plants are alive; some are planted on purpose (gardens) and some grow without intervention (wild plants and/or weeds). • I can recall and describe the different parts of a plant, including: roots, stem, leaves, seeds, flowers. • I know the key differences between trees that are deciduous and those that are evergreen.	• I can identify and classify plants as garden plants, wild plants, trees or weeds. • I can identify, describe and name the basic structure of trees – trunk, branch, bark, blossom. • I can make careful observations to name plants in the local area using identification charts. • I can observe living things over time to monitor changes.

Everyday Materials	
Knowledge	**Skills**
• I know the term 'material' means more than just *fabric*. • I know the names of a variety of everyday materials and sort objects according to the material/s they are made from. • I know the term 'properties' in relation to describing the appearance of different objects. • I know the terms 'absorbent' and 'not absorbent' in relation to the materials tested. • I know the term 'waterproof' in relation to the properties of different materials.	• I can ask and suggest answers (using correct vocabulary) to one key question: what properties does the material have? • I can ask and suggest answers (using correct vocabulary) to one key question: what material is best at absorbing water? • I can explain how I asked questions and investigated to find out the answer.

Seasonal Change	
Knowledge	**Skills**
• I know the order and names of the four seasons. • I know how different plants and animals in the local area are affected by the different seasons. • I know that there are changes in weather, temperature and daylight in each season.	• I can make observations and compare weather, temperature and daylight.

Year 2 Assessment End Points

Plants	
Knowledge	**Skills**
• I know that plants grow from seeds and bulbs. • I have a secure understanding of the term 'germination' and associate this with the process where seeds and bulbs grow into plants. • I know that plants need water, light and a suitable temperature to grow and keep them healthy. • I know the main stages of the plant lifecycle from seed to plant to flower to seed.	• I can use simple equipment to make careful observations about the structure of a seed. • With support, I can set up a simple test to support me to answer a question about seed germination. • I can set up a simple test with one variable to support them to answer the question 'Do seeds need water to germinate'? • I can ask simple questions and recognise that they can be answered in different ways.

	• I can gather and record information to help answer simple questions.

Uses of Everyday Materials	
Knowledge	**Skills**
• I know that different everyday objects are made from a range of different materials. • I know that materials have different properties, making them suitable for specific purposes and can give examples. • I know the suitability of a variety of everyday materials for different uses (e.g. to make a ball bounce). • I know that different solid objects have different properties. • I can explain how the shapes of solid objects made from some materials can be changed by stretching.	• I can reliably identify and classify the uses of different materials based on their properties. • I can answer simple questions by identifying and classifying a range of different materials. • I can gather and record data in a simple test to help them answer the question: How well do different materials bounce? • I can explain how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. • I understand how carrying out simple tests helps me (and scientists) to answer questions.