

## Year 4 Scheme of Learning: Science

### Year 4 – Autumn 1 – States of matter

| Lesson 1              |                                                                                                                                                                                                                                                         |
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| Learning Objective    | <b>To compare materials.</b>                                                                                                                                                                                                                            |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- We use materials such as wood, metal, plastic, glass and fabric to make most everyday objects.</li><li>- Different materials have different properties. These properties usually suit their function.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                            |
| Key Vocabulary        | Property, resistant, erode, transparent.                                                                                                                                                                                                                |

| Lesson 2              |                                                                                                                                                                  |
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| Learning Objective    | <b>To group materials together, based on observations.</b>                                                                                                       |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Materials have different appearances and textures.</li><li>- We can group materials based on their properties.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                     |
| Key Vocabulary        | Variation, grouping, texture, <b>different texture words.</b>                                                                                                    |

| Lesson 3              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| Learning Objective    | <b>To recognise that some materials, for example water, may exist in solid, liquid and gas states.</b>                                                                                                                                                                                                                                                                                                                                                                                                             |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- A solid keeps its shape and has a fixed volume.</li><li>- A liquid has a fixed volume but changes in shape to fit the container. It can be poured and keeps a level, horizontal surface.</li><li>- A gas fills all available space; it has no fixed shape or volume.</li><li>- Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Key Vocabulary        | Solid, liquid, gas, particles, energy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Lesson 4              |                                                                                                                                                                                                                                                    |
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| Learning Objective    | <b>To make careful observations about how matter changes from solid to liquid.</b>                                                                                                                                                                 |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Melting is a state change from solid to liquid.</li><li>- Freezing is a state change from liquid to solid.</li><li>- When a material freezes, the particles slow down to a halt to become solid.</li></ul> |
| Procedural Knowledge  | Making observations.                                                                                                                                                                                                                               |
| Key Vocabulary        | State, particles, melt, freeze, freezing point.                                                                                                                                                                                                    |

| Lesson 5              |                                                      |
|-----------------------|------------------------------------------------------|
| Learning Objective    | To record what has been learnt in a variety of ways. |
| Declarative Knowledge |                                                      |
| Procedural Knowledge  | Recording data                                       |
| Key Vocabulary        | Criteria, represent, interpret,                      |

## Year 4 – Autumn 2 – States of matter

| Lesson 1              |                                                                                                                                                                                                                                                                                                                                                                                 |
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| Learning Objective    | <b>To observe that materials change state when they are heated and cooled.</b>                                                                                                                                                                                                                                                                                                  |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid.</li><li>- Evaporation is the same state change as boiling (liquid to gas) but it happens slowly at lower temperatures and only at the surface of the liquid.</li></ul> |
| Procedural Knowledge  | Observing and measuring.                                                                                                                                                                                                                                                                                                                                                        |
| Key Vocabulary        | Solid, liquid, gas, melt, freeze, condense, evaporate.                                                                                                                                                                                                                                                                                                                          |

| Lesson 2              |                                                                                                                                                                                                                    |
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| Learning Objective    | <b>To recognise when these processes, called freezing, boiling and melting, take place.</b>                                                                                                                        |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Water boils when it is heated to 100°C.</li><li>- The melting point of water is 0°C.</li><li>- I can name the boiling and melting point of a range of materials.</li></ul> |
| Procedural Knowledge  | Recording data.                                                                                                                                                                                                    |
| Key Vocabulary        | Boiling point, melting point.                                                                                                                                                                                      |

| Lesson 3              |                                                                                                                                                      |
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| Learning Objective    | <b>To measure and research temperatures in degrees Celsius.</b>                                                                                      |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Temperature is measured in degrees Celsius.</li><li>- We use a thermometer to measure temperature.</li></ul> |
| Procedural Knowledge  | Recording data.                                                                                                                                      |
| Key Vocabulary        | Thermometer, Celsius.                                                                                                                                |

| Lesson 4              |                                                                                                                                                                                                                                                                                                                                                                                                            |
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| Learning Objective    | <b>To recognise when evaporation and condensation take place.</b>                                                                                                                                                                                                                                                                                                                                          |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Evaporation is the same state change as boiling (liquid to gas) but it happens slowly at lower temperatures and only at the surface of the liquid.</li><li>- Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.</li><li>- Condensation is the change back from a gas to a liquid caused by cooling.</li></ul> |
| Procedural Knowledge  | Communicating ideas.                                                                                                                                                                                                                                                                                                                                                                                       |
| Key Vocabulary        | Evaporate, condensation, steam, water vapour.                                                                                                                                                                                                                                                                                                                                                              |

| Lesson 5              |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| Learning Objective    | <b>To identify the part played by evaporation and condensation in the water cycle.</b>                                                                                                                                                                                                                                                                                                                                                                        |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- Water at the surface of seas, rivers etc. evaporates into water vapour (a gas).</li> <li>- This rises, cools and condenses back into a liquid forming clouds.</li> <li>- When too much water has condensed the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation.</li> <li>- This is the water cycle.</li> </ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Key Vocabulary        | Evaporate, condensation, water vapour, clouds, precipitation.                                                                                                                                                                                                                                                                                                                                                                                                 |

## Year 4 – Spring 1 – Animals inc. Humans

| Lesson 1              |                                                                                                                                                                        |
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| Learning Objective    | <b>To understand the sequence of the digestive system.</b>                                                                                                             |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- The digestive system is to turn food into chemicals for our bodies.</li><li>- It also allows us to get rid of waste.</li></ul> |
| Procedural Knowledge  | Communicating ideas.                                                                                                                                                   |
| Key Vocabulary        | Glands, faeces, digestion, chemicals.                                                                                                                                  |

| Lesson 2              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Learning Objective    | <b>To describe the function of each part of the digestive system.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Food enters the body through the mouth.</li><li>- Saliva is added and the tongue rolls the food into a ball.</li><li>- The food is swallowed and passes down the oesophagus to the stomach.</li><li>- The food passes into the small intestine.</li><li>- Nutrients are removed from the food and leave the digestive system to be used elsewhere in the body.</li><li>- The rest of the food then passes into the large intestine.</li><li>- Water is removed for use elsewhere in the body.</li><li>- What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Key Vocabulary        | Digestive system, mouth, teeth, saliva, oesophagus, stomach, intestines, nutrients, rectum, anus.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Lesson 3              |                                                                                                                                                                             |
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| Learning Objective    | <b>To identify the different types of teeth that humans have.</b>                                                                                                           |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Humans have four types of teeth - incisors for cutting, canines for tearing, molars and premolars for grinding (chewing).</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                |
| Key Vocabulary        | Incisors, canines, molars, premolars, teeth, chewing.                                                                                                                       |

| Lesson 4              |                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To understand the function of the skeleton.</b>                                                                                           |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Humans have skeletons and muscles which help them move and provide protection and support.</li></ul> |
| Procedural Knowledge  | Communicating ideas.                                                                                                                         |
| Key Vocabulary        | Skeleton, bones, support, protect, skull, ribs, joints.                                                                                      |

| Lesson 5              |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| Learning Objective    | <b>To investigate how our physical differences can affect sporting performance.</b> |
| Declarative Knowledge |                                                                                     |
| Procedural Knowledge  | Recording data.                                                                     |
| Key Vocabulary        | Variables, data, height, distance.                                                  |

| Lesson 6              |                                                                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To classify animals based on the types of teeth they have.</b>                                                                                                                           |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- Animals will have different teeth based on their diet.</li> <li>- Carnivores will require sharper teeth to tear through meat and flesh.</li> </ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                |
| Key Vocabulary        | Carnivore, herbivore, omnivore, diet.                                                                                                                                                       |

| Lesson 7              |                                                                                                                                                                                                                                                                                               |
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| Learning Objective    | <b>To identify similarities and differences between animals' skeletons.</b>                                                                                                                                                                                                                   |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- All organisms have similar skeletal compare to the human skeleton.</li> <li>- Other animals, such as horses and birds, have different bone layouts.</li> <li>- Some animals have skeletons on the outside of their bodies (exoskeletons).</li> </ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                                                                  |
| Key Vocabulary        | Scapula, humerus, radius, ulna, femur, fibula, tibia, pelvis.                                                                                                                                                                                                                                 |

## Year 4 – Spring 2 – Living Things & Their Habitats

| Lesson 1              |                                                                                                                                                                                                                                                                          |
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| Learning Objective    | <b>To recognise that living things can be classified in different ways.</b>                                                                                                                                                                                              |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Living things can be grouped (classified) in different ways according to their features.</li><li>- One way to group them is if they have a backbone. They are a vertebrate if they do and invertebrate if they do not.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                                             |
| Key Vocabulary        | Classification, vertebrate, invertebrate, groups.                                                                                                                                                                                                                        |

| Lesson 2              |                                                                                                                                                                                                                          |
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| Learning Objective    | <b>To ask relevant questions to separate living things into groups.</b>                                                                                                                                                  |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Living things can be grouped (classified) in different ways according to their features.</li><li>- I can name examples of characteristics we can use to group animals.</li></ul> |
| Procedural Knowledge  | Asking questions.                                                                                                                                                                                                        |
| Key Vocabulary        | Features, fur, hair, teeth, diet, habitat, colour, size.                                                                                                                                                                 |

| Lesson 3              |                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To use classification keys to name animals in the local environment.</b>                                           |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Classification keys can be used to identify and name living things.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                          |
| Key Vocabulary        | Features, fur, hair, teeth, diet, habitat, colour, size.                                                              |

| Lesson 4              |                                                                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To describe how environments change and cause species to become endangered.</b>                                                                                          |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Some species are endangered as their habitats are being destroyed.</li><li>- This destruction can be natural or man-made.</li></ul> |
| Procedural Knowledge  | Secondary sources.                                                                                                                                                          |
| Key Vocabulary        | Habitat, endangered, extinct, <b>types of habitat (e.g. desert, swamp, ocean).</b>                                                                                          |

## Year 5 – Summer 1 – Sound

| Lesson 1              |                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To understand how sounds are made and how we hear things.</b>                                |
| Declarative Knowledge | - A sound source produces vibrations which travel through a medium from the source to our ears. |
| Procedural Knowledge  | Communicating ideas.                                                                            |
| Key Vocabulary        | Sound, source, vibrations, medium, ears.                                                        |

| Lesson 2              |                                                                                                                                                                                                                                                            |
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| Learning Objective    | <b>To explain how different sounds travel.</b>                                                                                                                                                                                                             |
| Declarative Knowledge | - Different mediums such as solids, liquids and gases can carry sound but sound cannot travel through a vacuum (an area empty of matter). –<br>- The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                               |
| Key Vocabulary        | Mediums, vacuum, vibrations.                                                                                                                                                                                                                               |

| Lesson 3              |                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To find patterns between the pitch of sound and features of the object that produced.</b>                                                                                        |
| Declarative Knowledge | - Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds.<br>- For example, smaller objects usually produce higher pitched sounds. |
| Procedural Knowledge  | Interpreting data.                                                                                                                                                                  |
| Key Vocabulary        | Pitch, high, low.                                                                                                                                                                   |

| Lesson 4              |                                                                                                                                                                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To understand how distance affects how well we can hear a sound.</b>                                                                                                                                                                                                               |
| Declarative Knowledge | - The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium.<br>- Therefore, sounds decrease in volume as you move away from the source.<br>- A sound insulator is a material which blocks sound effectively. |
| Procedural Knowledge  | Observing and measuring.                                                                                                                                                                                                                                                              |
| Key Vocabulary        | Volume, distance, low, high, faint, loud, insulation.                                                                                                                                                                                                                                 |

## Year 5 – Summer 2 – Electricity

| Lesson 1              |                                                                                                                                                                                                                                                                            |
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| Learning Objective    | <b>To recognise which objects are conductors and which are insulators.</b>                                                                                                                                                                                                 |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Metals are good conductors so they can be used as wires in a circuit.</li><li>- Non-metallic solids are insulators except for graphite (pencil lead).</li><li>- Water, if not completely pure, also conducts electricity</li></ul> |
| Procedural Knowledge  | Making observations.                                                                                                                                                                                                                                                       |
| Key Vocabulary        | Electricity, circuit, insulator, conductor, metal, non-metal.                                                                                                                                                                                                              |

| Lesson 2              |                                                                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To identify common appliances that run on electricity.</b>                                                                                                               |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Many household devices and appliances run on electricity.</li><li>- Some plug into the mains and others run on batteries.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                |
| Key Vocabulary        | Electricity, appliance, device, mains, plug.                                                                                                                                |

| Lesson 3              |                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To identify electrical components and their symbols.</b>                                                                     |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- I can name a range of electrical components and identify what they look like.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                    |
| Key Vocabulary        | Symbol, component, cell, battery, crocodile clip, bulb, switch, buzzer, motor.                                                  |

| Lesson 4              |                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To construct a simple series electrical circuit.</b>                                                                                     |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- An electrical circuit consists of a cell or battery connected to a component using wires.</li></ul> |
| Procedural Knowledge  | Setting up tests.                                                                                                                           |
| Key Vocabulary        | Circuit, complete, cell, battery, wire, bulb, series.                                                                                       |

| Lesson 5              |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To predict whether a circuit will work and how it can be fixed using a battery.</b>                                                                   |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- If there is a break in the circuit, a loose connection or a short circuit the component will not work.</li></ul> |
| Procedural Knowledge  | Making predictions.                                                                                                                                      |
| Key Vocabulary        | Loose connection, short circuit, complete, connection.                                                                                                   |

| Lesson 6              |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| Learning Objective    | <b>To explain how an electrical switch works.</b>                        |
| Declarative Knowledge | - A switch can be added to the circuit to turn the component on and off. |
| Procedural Knowledge  | Communicating findings.                                                  |
| Key Vocabulary        | Switch, open, closed, complete.                                          |

| Lesson 7              |                                                                                                                                                                                                                                                                               |
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| Learning Objective    | <b>To identify situations when electricity can be dangerous.</b>                                                                                                                                                                                                              |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- Electricity flows in a complete circuit and could be dangerous if we come into contact with it.</li> <li>- To name examples of dangerous situations.</li> <li>- Water, if not completely pure, also conducts electricity.</li> </ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                                                  |
| Key Vocabulary        | Conductor, metal, complete, electrocute.                                                                                                                                                                                                                                      |