

## Science Curriculum Coverage: Key Stage One

Expected Vocabulary. NC Objectives. Intended activities. Prior knowledge – must be revisited  
before new content taught

| Year One           | Curriculum Objective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Knowledge/Activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Vocab                                                                                                                                                                                          |
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| Topic / Autumn One | <p>Lesson 1 –</p> <ul style="list-style-type: none"> <li>• Seasonal changes</li> <li>• Observe changes across the four seasons.</li> <li>• Observe and describe weather associated with the seasons and how the day length varies.</li> </ul> <p>Lesson 2 – <b>Seasonal changes</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Observe changes across the four seasons.</li> <li>• Observe and describe weather associated with the seasons and how the day length varies.</li> </ul> <p>Lesson 3 – <b>Seasonal changes</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Observe changes across the four seasons.</li> <li>• Observe and describe weather associated with the seasons and how the day length varies.</li> </ul> <p><b>Plants</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Identify and name a variety of common wild</li> </ul> | <p><b>Forces, Earth and space - Seasonal changes (6 lessons)</b> Reflecting on their own experiences, children learn about the four seasons and the weather associated with each. Pupils explore how seasonal changes affect trees, daylight hours and our choices about outfits. They plan and carry out their own weather reports, considering the knowledge required for this job.</p> <p><b>Lesson 1 – Wonderful weather</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>• To identify how the weather changes across the four seasons.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>• I can name the <b>four seasons</b>.</li> <li>• I can name the twelve <b>months of the year</b>.</li> <li>• I can describe the expected weather patterns for each season.</li> </ul> <p><b>Lesson 2 – Seasonal activities</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>• To identify events and activities that take place in different seasons.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>• I can name the four seasons.</li> <li>• I can suggest appropriate clothing to wear in different weather conditions.</li> <li>• I can <b>sort activities</b> and events into the correct seasons.</li> </ul> | <p>conclusion<br/>data<br/>deciduous tree<br/>evergreen tree<br/>pictogram<br/>predict<br/>record<br/>season<br/>sunrise<br/>sunset<br/>symbol<br/>temperature<br/>thermometer<br/>weather</p> |

and garden plants, including deciduous and evergreen trees.

#### Lesson 4 – **Science**

##### **Seasonal changes**

Pupils should be taught to:

- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how the day length varies.

##### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Gather and record data to help in answering questions.

#### Lesson 5 – **Seasonal changes**

Pupils should be taught to:

- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how the day length varies.

##### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Gather and record data to help in answering questions.

#### **Lesson 3 – How do trees change?**

##### **Learning objective**

- To recognise how trees change across the four seasons.

##### **Success criteria**

- I can name the four seasons in order.
- I can describe the appearance of a tree's leaves in each season.
- I can ask simple questions about my observations.

#### **Lesson 4 – Daylight hours**

##### **Learning objective**

##### **Knowledge:**

- To recognise that daylight hours change across the four seasons.

##### **Working scientifically:**

- To record data in a pictogram.

##### **Success criteria**

##### **Knowledge:**

- I can recall which seasons have the most and fewest daylight hours.

##### **Working scientifically:**

- I can gather and record data.
- I can complete a pictogram.
- I can use a pictogram to answer questions.

#### **Lesson 5 – Observing over time**

##### **Learning objective**

##### **Knowledge**

- To observe changes across the four seasons.

##### **Working scientifically**

- To gather and record data about how seasons change over time.

##### **Success criteria**

##### **Knowledge**

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|                    | <p>Lesson 6 – <b>Seasonal changes</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Observe changes across the four seasons.</li> <li>Observe and describe weather associated with the seasons and how the day length varies.</li> </ul>                                                                                                                                                              | <ul style="list-style-type: none"> <li>I can describe changes that take place in different seasons.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I understand that a <b>thermometer measures temperature.</b></li> <li>I can record data about the temperature in different seasons.</li> <li>I can <b>compare data</b> collected over time.</li> </ul> <p><b>Lesson 6 – Weather reports</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>To <b>plan and carry out a weather report.</b></li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can <b>label the capital cities</b> of each country in the UK.</li> <li>I can describe seasonal weather in the UK.</li> <li>I can suggest ways to prepare for different weather conditions.</li> </ul> <p><b>Key skill – literate</b><br/><b>Labelling, describing, recording</b></p> <p><b>Literate</b></p> |                                                                                                                                                   |
| Topic / Autumn Two | <p>Lesson 1 – <b>Everyday materials</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and classify.</li> </ul> <p>Lesson 2 – <b>Everyday materials</b></p> | <p><b>Materials - Everyday materials (6 lessons)</b><br/>Identifying the difference between objects and materials, children explore their surroundings to find examples of each. They work scientifically by planning tests, making observations and recording data. Pupils use results to answer questions and sort and group materials based on their properties.</p> <p><b>Lesson 1 – Naming materials</b><br/><b>Learning objectives</b></p> <ul style="list-style-type: none"> <li>To identify everyday materials.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>absorbent<br/>data<br/>fabric<br/>glass<br/>group<br/>material<br/>metal<br/>object<br/>opaque<br/>plastic<br/>property<br/>rock<br/>tough</p> |

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|  | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Distinguish between an object and the material from which it is made.</li> <li>• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</li> </ul> <p><b>Lesson 3 – Everyday materials</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Describe the simple physical properties of a variety of everyday materials.</li> </ul> <p><b>Lesson 4 – Everyday materials</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Observe closely, using simple equipment.</li> <li>• Perform simple tests.</li> <li>• Use their observations and ideas to suggest answers to questions.</li> <li>• Gather and record data to help in answering questions.</li> </ul> | <ul style="list-style-type: none"> <li>• Working scientifically: To sort objects into groups based on the materials they are made from.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>• I can name everyday materials.</li> <li>• I can identify the materials different objects are made from.</li> <li>• Working scientifically: I can sort objects into groups.</li> </ul> <p><b>Lesson 2 – Material detectives</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>• To recognise the difference between objects and materials.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>• I can name objects.</li> <li>• I can identify the material an object is made from.</li> <li>• I can explain the difference between objects and materials.</li> </ul> <p><b>Lesson 3 – Introduction to properties</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>• To describe the properties of materials.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>• I can recall that property refers to how a material can be described.</li> <li>• I can describe the properties of everyday materials.</li> <li>• I can recognise that objects are made from materials which suit their purpose.</li> </ul> <p><b>Lesson 4 – Is it absorbent?</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>• To group materials based on their properties (absorbency).</li> <li>• <b>Working scientifically:</b> To make observations and record data.</li> </ul> | <p>transparent<br/>waterproof<br/>wood</p> |
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### Lesson 5 – **Everyday materials**

Pupils should be taught to:

- Describe the simple physical properties of a variety of everyday materials.
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.

#### **Working scientifically**

Pupils should be taught to:

- Observe closely, using simple equipment.
- Perform simple tests.
- Use their observations and ideas to suggest answers to questions.
- Gather and record data to help in answering questions.

### Lesson 6 – **Everyday materials**

Pupils should be taught to:

- Describe the simple physical properties of a variety of everyday materials.
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.

#### **Working scientifically**

Pupils should be taught to:

#### **Success criteria**

- I can name the properties of materials.
- I can **sort materials** into groups based on their properties.
- Working scientifically: I can **describe and record** what I notice.

### **Lesson 5 – Is it waterproof?**

#### **Learning objective**

- **To group materials** based on their properties (waterproofness).

**Working scientifically:** To plan a test and suggest what might happen.

#### **Success criteria**

- I can suggest ways to test the properties of materials.
- I can **make a prediction**.
- Working scientifically: I can recognise when my prediction does not match the results.

**Key skill – Valuing (others' predictions)**

#### **Valuing**

### **Lesson 6 – Is it tough?**

#### **Learning objective**

- To **group materials** based on their properties (toughness).
- Working scientifically: To **answer questions** based on results.

#### **Success criteria**

- I can **describe** how materials respond to pulling and tearing.

#### **Working scientifically:**

- I can use my observations to answer questions.
- I can recognise if a test is fair.

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|                    | <ul style="list-style-type: none"> <li>• Observe closely, using simple equipment.</li> <li>• Perform simple tests.</li> <li>• Identify and classify.</li> <li>• Use their observations and ideas to suggest answers to questions.</li> <li>• Gather and record data to help in answering questions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>Key skill – Numerate<br/>Measuring and comparing and sorting</p> <p>Numerate</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                  |
| Topic / Spring One | <p>Lesson 1 – <b>Animals, including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</li> <li>• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• Asking simple questions and recognising that they can be answered in different ways.</li> <li>• Observing closely, using simple equipment.</li> <li>• Performing simple tests.</li> <li>• Identifying and classifying.</li> </ul> | <p><b>Animals including humans - Sensitive bodies</b></p> <p>Familiarising themselves with the basic parts of the human body, children investigate their senses through stimulating experiences that highlight how we interact with the world around us. They work scientifically, using their senses to make observations, spot patterns and use data to answer questions. They develop an understanding of how science can support those who have lost sensory function and consider how firefighters use their senses at work.</p> <p><b>Lesson 1 – Body parts</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• To name parts of the human body.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• To sort body parts into groups.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can draw and label human body parts.</li> <li>• I can identify some differences in animal body parts.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• I can use <b>sorting rings</b> to group the same and different body parts.</li> </ul> | <p>action<br/>bitter<br/>blind<br/>body<br/>compare<br/>data<br/>direction<br/>distance<br/>feeling<br/>group<br/>hearing<br/>investigation<br/>loud<br/>obstacle<br/>pattern<br/>quiet<br/>research<br/>salty<br/>sense<br/>senses<br/>sensitive<br/>sight<br/>smell<br/>sour<br/>sweet<br/>taste<br/>touch</p> |

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|  | <ul style="list-style-type: none"> <li>Using their observations and ideas to suggest answers to questions.</li> <li>Gathering and recording data to help in answering questions.</li> </ul> <p><b>Lesson 2 – Animals, including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul> <p><b>Science</b></p> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Asking simple questions and recognise that they can be answered in different ways.</li> <li>Observing closely, using simple equipment.</li> <li>Using their observations and ideas to suggest answers to questions.</li> <li>Gathering and recording data to help in answering questions.</li> </ul> <p><b>Lesson 3 – Animals, including humans</b></p> | <p><b>Lesson 2 – The senses</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To name the body parts used for each sense.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To spot <b>patterns in data</b>.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can draw and label the body parts used for each sense.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can <b>measure using cubes</b>.</li> <li>I can use patterns in data to answer a question.</li> </ul> <p><b>Lesson 3 – Taste and touch</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify the body parts used for the sense of taste and touch.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To use the senses to <b>make observations</b>.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can use my sense of touch to identify an object.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can <b>describe the taste</b> of different foods.</li> <li>I can record <b>describing words</b> in a table.</li> </ul> <p><b>Lesson 4 – Sight and smell</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify the body parts used for the sense of smell and sight.</li> </ul> <p><b>Science in action</b></p> <ul style="list-style-type: none"> <li>To recognise that scientists are always making new discoveries.</li> </ul> | <p>volume</p> |
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Pupils should be taught to:

- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Observing closely, using simple equipment.
- Identifying and classifying.

#### **Lesson 4 – Animals, including humans**

Pupils should be taught to:

- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

#### **Lesson 5 – Animals, including humans**

Pupils should be taught to:

- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

#### **Working scientifically**

#### **Success criteria**

##### **Knowledge**

- I can recall the body part used for smell.
- I can recall the body parts used for sight.

##### **Science in action**

- I can understand the importance of research into sight.

#### **Lesson 5 – Hearing**

##### **Learning objectives**

##### **Knowledge**

- To identify the body part used for the sense of hearing.

##### **Working scientifically**

- To investigate how sound changes as you move further away.

##### **Success criteria**

##### **Knowledge**

- I can name the body part used for hearing.
- I can identify an object based on the sound it makes.

##### **Working scientifically**

- I can use my observations to answer a question.

#### **Lesson 6 – Senses in action**

##### **Learning objectives**

##### **Knowledge**

- To recognise how the senses are used in everyday life.

##### **Science in action**

- To recognise the importance of the senses in certain jobs.

##### **Success criteria**

##### **Knowledge**

- I can list actions people take based on their senses.

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|                    | <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• Observing closely, using simple equipment.</li> <li>• Performing simple tests.</li> <li>• Using their observations and ideas to suggest answers to questions.</li> <li>• Gathering and recording data to help in answering questions.</li> </ul> <p>Lesson 6 – <b>Animals, including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul> | <ul style="list-style-type: none"> <li>• I can name feelings people have based on their senses.</li> </ul> <p><b>Science in action</b></p> <ul style="list-style-type: none"> <li>• I can describe how a firefighter uses their senses.</li> </ul> <p>Key skill – Curious (asking questions)</p> <p>Curious</p>                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                 |
| Topic / Spring Two | <p>Lesson 1 – <b>Animals, including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li> </ul> <p>Lesson 2 – <b>Animals, including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Identify and name a variety of common animals including fish,</li> </ul>                                                                                                                                                                                                                   | <p><b>Animals including humans. Comparing animals (6 lessons)</b> Studying both local and global animals, children recognise common characteristics and physical features. They use this information to make comparisons and classify animals. Pupils consider the most effective way to collect data about class pets and record their findings in a block chart. They develop their understanding of classification by comparing the dietary habits of different animals and role play as Jane Goodall carrying out research into chimpanzees in the wild.</p> <p><b>Lesson 1 – Animal groups Learning objective</b></p> <ul style="list-style-type: none"> <li>• To identify and group animals.</li> </ul> | <p>amphibian<br/>bird<br/>block chart<br/>body<br/>carnivore<br/>compare<br/>data<br/>diet<br/>differences<br/>feature<br/>fish<br/>group<br/>herbivore<br/>hunt<br/>mammal</p> |

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|  | <p>amphibians, reptiles, birds and mammals.</p> <ul style="list-style-type: none"> <li>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</li> </ul> <p><b>Lesson 3 – Animals, including humans</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li> <li>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</li> </ul> <p><b>Lesson 4 – Animals, including humans</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li> <li>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li> </ul> | <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can <b>name</b> animals.</li> <li>I can identify the features of animals.</li> <li>I can <b>group</b> animals based on their similarities and differences.</li> </ul> <p><b>Lesson 2 – Describing animals</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>To <b>describe a</b> variety of animals.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can <b>recall</b> animal groups and what they have in common.</li> <li>I can name animal body parts.</li> <li>I can recognise differences in animals.</li> </ul> <p><b>Lesson 3 – Comparing animals</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>To <b>compare</b> the features of animals.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can recognise similarities.</li> <li>I can sort animals and choose appropriate group labels.</li> <li>I can identify differences between animals in the same group.</li> </ul> <p><b>Lesson 4 – Carnivore, herbivores or omnivore</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify animals that are carnivores, herbivores and omnivores.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To <b>research using non-fiction texts</b>.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can <b>recall</b> what carnivores, herbivores and omnivores eat.</li> <li>I can <b>sort</b> animals into groups according to what they eat.</li> </ul> | <p>observe<br/>omnivore<br/>pet<br/>record<br/>reptile<br/>research<br/>scientist<br/>similarities<br/>tally</p> |
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**Lesson 5 – Animals, including humans**

Pupils should be taught to:

- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.
- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking simple questions and recognising that they can be answered in different ways.
- Gathering and recording data to help in answering questions.

**Lesson 6 – Animals, including humans**

Pupils should be taught to:

- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets).

**Working scientifically**

**Working scientifically**

- I can use a non-fiction text to find out what animals eat.

**Lesson 5 – Pets  
Learning objectives**

**Knowledge**

- To recognise animals that make suitable pets.

**Working scientifically**

- To gather and record data to help in answering questions.

**Success criteria**

**Knowledge**

- I can recall how to care for a pet.

**Working scientifically**

- I can respond to suggestions about how to collect data.
- I can record data in a block chart.

**Lesson 6 – Jane Goodall**

**Learning objectives**

**Knowledge**

- To describe and compare the structure of animals.

**Science in action**

- To know about famous scientists throughout history.

**Success criteria**

**Knowledge**

- I can recognise similarities and differences between humans and chimpanzees.

**Science in action**

- I can recall a famous scientist.
- I can recall how Jane Goodall gathered data.
- I can describe Jane Goodall's findings.

Y1 Spring 1 sensitive bodies

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                    |
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|                           | <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Gathering and recording data to help in answering questions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Key Skill – Numerate</b></p> <p><b>Numerate</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                    |
| <p>Topic / Summer One</p> | <p><b>Lesson 1 – Plants</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</li> <li>Identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Asking simple questions and recognising that they can be answered in different ways.</li> <li>Observing closely, using simple equipment.</li> <li>Performing simple tests.</li> <li>Identifying and classifying.</li> <li>Using their observations and ideas to suggest answers to questions.</li> </ul> <p><b>Lesson 2 – Plants</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name a variety of common wild</li> </ul> | <p><b>Plants - Introduction to plants (6 lessons)</b><br/>Venturing outside, children identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. They use magnifying glasses to observe and name plant parts and draw and label diagrams of flowers. Children closely observe leaves and sort them into groups based on their appearance. They use non-standard units to measure leaf length and record their observations in a table. Pupils investigate if beans need water for growth and identify edible plant parts.</p> <p><b>Lesson 1 – What is a plant?</b><br/><b>Learning objective</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify plants in the school grounds.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To plan an investigation.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can identify plants and their features.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can ask <b>questions about plants.</b></li> <li>I can help decide how to set up an investigation.</li> </ul> <p><b>Key skill – curious (asking questions)</b></p> <p><b>Curious</b></p> <p><b>Lesson 2 – Parts of a plant</b></p> | <p>data<br/>deciduous<br/>diagram<br/>edible<br/>evergreen<br/>feature<br/>fruit<br/>flower<br/>garden plants<br/>grouping<br/>growth<br/>investigation<br/>leaf<br/>measure<br/>observe<br/>plant<br/>prediction<br/>roots<br/>research<br/>seed<br/>shoot<br/>stem<br/>trunk<br/>wild plants</p> |

and garden plants, including deciduous and evergreen trees.

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

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment.
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.

#### **Lesson 3 – Plants**

Pupils should be taught to:

- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Observing closely, using simple equipment.
- Identifying and classifying.

#### **Learning objectives**

##### **Knowledge**

- To identify parts of a flowering plant.

##### **Working scientifically**

- To draw and label a diagram.

##### **Success criteria**

##### **Knowledge**

- I can **recall** the parts of a flowering plant.

##### **Working scientifically**

- I can use a magnifying glass to observe closely.
- I can draw and label a diagram of a flowering plant.

#### **Lesson 3 – Wild and garden plants**

##### **Learning objective**

##### **Knowledge**

- To identify and name wild and garden plants.

##### **Working scientifically**

- To sort flowers into groups.

##### **Success criteria**

##### **Knowledge**

- I can use pictures to help me identify plants.

##### **Working scientifically**

- I can use a magnifying glass to observe closely.
- I can choose a way to sort flowering plants into groups.

#### **Lesson 4 – Deciduous and evergreen trees**

##### **Learning objective**

##### **Knowledge**

- To identify and name deciduous and evergreen trees.

##### **Working scientifically**

- To measure and compare leaves.

##### **Success criteria**

#### Lesson 4 – Plants

Pupils should be taught to:

- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.
- Identify and describe the basic structure of a variety of common flowering plants, including trees.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Observing closely, using simple equipment.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.

#### Lesson 5 – Plants

Pupils should be taught to:

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

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Observing closely, using simple equipment.
- Identifying and classifying.

#### Knowledge

- I can name some trees and their parts.

#### Working scientifically

- I can observe leaves and identify similarities and differences.
- I can measure leaves using cubes.

#### Lesson 5 – Sorting seeds

#### Learning objective

#### Knowledge

- To recognise that new plants come from seeds and bulbs.

#### Working scientifically

- To recognise that observations do not always match predictions.

#### Success criteria

#### Knowledge

- I can recall that plants grow seeds or bulbs.

#### Working scientifically

- I can use similarities and differences to group seeds and bulbs.
- I can recognise when my observations do not match my predictions.

#### Lesson 6 – Which plant parts can you eat?

#### Learning objectives

#### Science in action

- To recognise the importance of a scientist's role.

#### Working scientifically


- To use observations to find answers to questions.

#### Success criteria

#### Science in action

- I can name important discoveries made by scientists.

#### Working scientifically

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                      |
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|                    | <ul style="list-style-type: none"> <li>Using their observations and ideas to suggest answers to questions.</li> </ul> <p>Lesson 6 – <b>Plants</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Observing closely, using simple equipment.</li> <li>Identifying and classifying.</li> <li>Using their observations and ideas to suggest answers to questions.</li> </ul> | <ul style="list-style-type: none"> <li>I can closely observe different plant parts.</li> <li>I can identify plant parts that are eaten.</li> </ul> <p>Key skill – communicator. Looking at similarities and differences.</p>                                                                                                                                                                                                                                             |                                                                                                                                      |
| Topic / Summer Two | Science and investigators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Jane Goodall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Chimpanzees                                                                                                                          |
| Year Two           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                      |
| Topic / Autumn One | <p>Lesson 1 – <b>Living things and their habitats</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Explore and compare the differences between things that are living, dead, and things that have never been alive.</li> </ul> <p><b>Working scientifically (non-statutory)</b><br/>Pupils should:</p>                                                                                                                                                                                                                                                                                                                                                                  | <p><b>Living things and their habitats - Habitats (6 lessons)</b><br/>Considering the life processes that all living things have in common, pupils classify objects into alive, was once alive or has never been alive. Pupils explore global habitats, naming plants and animals that can be found there. They learn how a range of different living things depend on each other for food or shelter. Pupils explore this further by creating food chains to show the sequence that living things eat each other for energy to grow and stay healthy.</p> | <p>alive<br/>analyse<br/>camouflage<br/>carnivore<br/>classify<br/>coastal<br/>dead<br/>depend<br/>diet<br/>energy<br/>excretion</p> |

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|  | <ul style="list-style-type: none"> <li>• Raise and answer questions that help them to become familiar with the life processes that are common to all living things.</li> </ul>                                                                                                                                                        | <p><b>Lesson 1 – Life processes</b></p> <p><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>• To identify some of the characteristics of living things.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>• I can <b>ask questions</b> to find out what living things have in common.</li> <li>• I can name some of the life processes.</li> <li>• I can give examples of how life processes apply to plants and animals.</li> </ul>                                                                                                                                    | <p>food chain<br/>growth<br/>habitat<br/>herbivore<br/>life process<br/>mammal<br/>movement<br/>nutrition<br/>ocean<br/>omnivore<br/>predator<br/>prey<br/>producer<br/>rainforest<br/>reproduction<br/>sensitivity<br/>shelter<br/>woodland</p> |
|  | <p><b>Lesson 2 – Living things and their habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Explore and compare the differences between things that are living, dead, and things that have never been alive.</li> </ul>                                                                     | <p><b>Lesson 2 – It feels good to be alive</b></p> <p><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>• To recognise the difference between things that are alive, were once alive or have never been alive.</li> <li>• Working scientifically: To <b>classify objects into groups</b>.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>• I can recall some of the life processes.</li> <li>• I can name objects that are living, were once alive or have never been alive.</li> <li>• I can classify objects into groups, giving reasons for my choices.</li> </ul> |                                                                                                                                                                                                                                                  |
|  | <p><b>Lesson 3 – Living things and their habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Identify and name a variety of plants and animals in their habitats, including microhabitats.</li> </ul>                                                                                        | <p><b>Lesson 3 – Introduction to habitats</b></p> <p><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>• To identify plants and animals in different habitats.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>• I can name four different habitats.</li> <li>• I can match animals and plants to their habitats.</li> <li>• I can <b>describe</b> what a habitat is like.</li> </ul>                                                                                                                                                                                  |                                                                                                                                                                                                                                                  |
|  | <p><b>Lesson 4 – Living things and their habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                  |

- Identify and name a variety of plants and animals in their habitats.

#### Lesson 5 – Living things and their habitats

Pupils should be taught to:

- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.
- Identify and name a variety of plants and animals in their habitats.

#### Lesson 6 – Living things and their habitats

Pupils should be taught to:

- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

#### Lesson 4 – Woodland habitats

##### Learning objective

- To identify how a habitat provides animals and plants with what they need to survive.
- Working scientifically: To carry out research to find answers to questions.

##### Success criteria

- I can use a website to retrieve information.
- I can name woodland plants and animals.
- I can give examples of how animals use the woodland habitat for food and shelter.

#### Lesson 5 – Rainforest and ocean habitats

##### Learning objective

- To recognise how animals and plants depend on each other.

##### Success criteria

- I can name animals in a rainforest and ocean habitat.
- I can recall that a plant produces its own food.
- I can give examples of how animals and plants depend on each other.

#### Lesson 6 – Food chains

##### Learning objective

- To recall how animals get their food from plants and other animals.

##### Success criteria

- I can name a producer and place it at the beginning of a food chain.
- I can name predators that prey on other animals.
- I can use arrows to show the order of a food chain.

Key skill – literate. Describing habitats.

Literate

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| <p>Topic / Autumn Two</p> | <p><b>Lesson 1 – Living things and their habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</li> <li>Identify and name a variety of plants and animals in their habitats, including microhabitats.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught the scientific skills of:</p> <ul style="list-style-type: none"> <li>Identifying and classifying.</li> </ul> <p><b>Lesson 2 – Living things and their habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</li> <li>Identify and name a variety of plants and</li> </ul> | <p><b>Living things and their habitats Microhabitats (6 lessons)</b> Developing their understanding of scientific enquiry, pupils learn that scientists use a range of skills to answer questions. They discover that microhabitats provide what minibeasts need to survive and carry out a survey to find out where different minibeasts live in the school grounds. They practise asking scientific questions and follow a method to investigate which conditions woodlice prefer. Pupils explore the job role of a botanist by identifying flowering plants.</p> <p><b>Key skill – curious (asking curious questions)</b></p> <p><b>Curious</b></p> <p><b>Lesson 1 – Identifying and classifying minibeasts</b></p> <p><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>Working scientifically: To classify a variety of minibeasts.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can name a variety of minibeasts.</li> <li>I can recognise the different characteristics of minibeasts.</li> <li>I can sort minibeasts into groups based on my observations.</li> <li>Working scientifically: I can organise questions to create a simple classification key.</li> </ul> <p><b>Lesson 2 – Introduction to scientific enquiry</b></p> <p><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>Working scientifically: To recognise how scientists answer questions.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can recognise that scientists choose the most suitable way to answer questions.</li> <li>I can ask questions about worms.</li> </ul> | <p>botanist<br/>camouflage<br/>characteristics<br/>classification key<br/>classify<br/>comparative/fair test<br/>conclusion<br/>criteria<br/>data<br/>food chain<br/>identify<br/>invertebrate<br/>method<br/>microhabitat<br/>minibeast<br/>research<br/>results<br/>species<br/>survey<br/>tally<br/>test</p> |
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animals in their habitats, including microhabitats.

### **Working scientifically**

Pupils should be taught to:

- Ask simple questions and recognise that they can be answered in different ways.
- Use their observations and ideas to suggest answers to questions.

### **Lesson 3 – Living things and their habitats**

Pupils should be taught to:

- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.
- Identify and name a variety of plants and animals in their habitats, including microhabitats.

### **Working scientifically**

Pupils should be taught to:

- Observe closely, using simple equipment.
- Use their observations and ideas to suggest answers to questions.

- I can use an information text to find answers to questions.

### **Lesson 3 – Minibeasts hunt**

#### **Learning objective**

- To recognise that living things live in habitats to which they are suited.
- Working scientifically: To gather and record data to answer a question.

#### **Success criteria**

- I can make close observations and use equipment safely.
- I can give examples of how microhabitats suit the needs of minibeasts.
- Working scientifically: I can gather data and record it in a survey.

### **Lesson 4 – Planning and experiment**

#### **Learning objective**

- Working scientifically: To ask questions and plan how to carry out an experiment.

#### **Success criteria**

- I can ask questions about the conditions minibeasts prefer.
- I can suggest what observations to make.
- I can order the steps of a method.

### **Lesson 5 – Woodlice experiment**

#### **Learning objective**

- Working scientifically: To carry out an experiment and record data in a table.

#### **Success criteria**

- I can use a stopwatch.
- I can use tally marks to record results.
- I can use my results to answer a question.

### **Lesson 6 – What is a botanist?**

#### **Learning objectives**

- Gather and record data to help in answering questions.

**Lesson 4 – Working scientifically**

Pupils should be taught to:

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Use their observations and ideas to suggest answers to questions.
- Gather and record data to help in answering questions.

**Lesson 5 – Living things and their habitats**

Pupils should be taught to:

- Identify that most living things live in habitats to which they are suited.

**Working scientifically**

Pupils should be taught to:

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.

- To identify a variety of flowering plants.
- Science in action: To understand the role of a botanist.

**Success criteria**

- I can recognise similarities and differences.
- I can use an identification chart to name flowering plants.
- I can describe the role of a botanist.

Y2 Autumn 1 Habitats

Key Skill – Numerate

Numerate

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                             |
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|                    | <ul style="list-style-type: none"> <li>• Use their observations and ideas to suggest answers to questions.</li> <li>• Gather and record data to help in answering questions.</li> </ul> <p><b>Lesson 6 – Living things and their habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Identify and name a variety of plants in their habitats, including microhabitats.</li> </ul> <p><b>Science</b><br/><b>Working scientifically</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Observe closely, using simple equipment.</li> <li>• Identify and classify.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                             |
| Topic / Spring One | <p><b>Lesson 1 – Plants</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Observe and describe how seeds and bulbs grow into mature plants.</li> <li>• Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• Asking simple questions and recognising that they</li> </ul>                                                                                       | <p><b>Plants - Plant growth (6 lessons)</b></p> <p>Carrying out comparative tests, pupils identify the conditions required for seed germination and compare these to the survival needs of plants in later growth phases. Pupils use rulers to measure stem growth and record data in a table. They use their results to conclude that plants need water, light and a suitable temperature to grow and stay healthy. Children identify the stages in a plant's life cycle and discover how humans impact plants in the environment.</p> <p><b>Lesson 1 – What do seeds need to grow?</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• To recognise that seeds need certain conditions for growth.</li> </ul> | bulb<br>comparative test<br>conclusion<br>condition<br>diagram<br>energy<br>flower<br>germinate<br>growth<br>leaf<br>life cycle<br>measure<br>nutrient<br>observe<br>plant<br>shoot<br>seed |

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|  | <p>can be answered in different ways.</p> <ul style="list-style-type: none"> <li>• Observing closely, using simple equipment.</li> <li>• Performing simple tests.</li> </ul> <p><b>Lesson 2 – Plants</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Observe and describe how seeds and bulbs grow into mature plants.</li> <li>• Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• Asking simple questions and recognising that they can be answered in different ways.</li> <li>• Observing closely, using simple equipment.</li> <li>• Performing simple tests.</li> <li>• Using their observations and ideas to suggest answers to questions.</li> <li>• Gathering and recording data to help in answering questions.</li> </ul> <p><b>Lesson 3 – Plants</b><br/>Pupils should be taught to:</p> | <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• To plan comparative tests.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can suggest conditions that help seeds grow.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• I can suggest what should change when planning a comparative test.</li> <li>• I can plan what to observe and measure.</li> </ul> <p><b>Lesson 2 – Seeds and bulbs</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• To recognise that seeds and bulbs contain what they need to grow into a plant.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• To measure with a ruler.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can recall that seeds have an energy store inside.</li> <li>• I can recall that a seed needs suitable conditions to grow.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• I can measure the height of a shoot in centimetres.</li> </ul> <p><b>Lesson 3 – Germination</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• To describe what seeds need to germinate.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• To record data in a table.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can recall that seeds need water and warmth to germinate.</li> </ul> | <p>seedling<br/>seed coat<br/>stem<br/>wilt</p> |
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- Observe and describe how seeds and bulbs grow into mature plants.
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment.
- Performing simple tests.
- Using their observations and ideas to suggest answers to questions.
- Gathering and recording data to help in answering questions.

**Lesson 4 – Plants**

Pupils should be taught to:

- Observe and describe how seeds and bulbs grow into mature plants.
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

**Working scientifically**

**Working scientifically**

- I can record plant growth data in a table.
- I can compare plant growth in different test conditions.

**Key skill – numerate**

**Numerate**

**Lesson 4 – Light and plant growth**

**Learning objectives**

**Knowledge**

- To describe the effect of light on plant growth.

**Working scientifically**

- To observe using a magnifying glass.

**Success criteria**

**Knowledge**

- I can recall that plants need light for healthy growth.

**Working scientifically**

- I can use a magnifying glass to observe and compare plant growth.
- I can record plant growth data over time.

**Lesson 5 – Plant life cycle**

**Learning objectives**

**Knowledge**

- To identify stages of a plant's life cycle.

**Working scientifically**

- To draw and label diagrams.

**Success criteria**

**Knowledge**

- I can describe the stages of a plant's life cycle.
- I can sequence the stages of a plant's life cycle.

**Working scientifically**

- I can draw diagrams to represent the stages of a plant's life cycle.

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Observing closely, using simple equipment.
- Using their observations and ideas to suggest answers to questions.
- Gathering and recording data to help in answering questions.

#### Lesson 5 – Plants

Pupils should be taught to:

- Observe and describe how seeds and bulbs grow into mature plants.
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Using their observations and ideas to suggest answers to questions.

#### Lesson 6 – Plants

Pupils should be taught to:

- Observe and describe how seeds and bulbs grow into mature plants.

#### Lesson 6 – Plant care

##### Learning objectives

##### Knowledge

- To recognise what plants need for healthy growth.

##### Science in action

- To recognise that humans have a responsibility to care for plants.

##### Success criteria

##### Knowledge

- I can recall what plants need for healthy growth.

##### Science in action

- I can describe why healthy plant growth is important.
- I can describe the impact of humans on plant growth in the environment.

Y1 Summer 1 Introduction to plants

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                            |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | <ul style="list-style-type: none"> <li>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Asking simple questions and recognising that they can be answered in different ways.</li> <li>Observing closely, using simple equipment.</li> <li>Using their observations and ideas to suggest answers to questions.</li> <li>Gathering and recording data to help in answering questions.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                            |
| <p>Topic / Spring Two</p> | <p>Lesson 1 – <b>Animals, including humans</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Notice that animals, including humans, have offspring which grow into adults.</li> </ul> <p>Lesson 2 – <b>Animals, including humans</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Notice that animals, including humans, have offspring which grow into adults.</li> </ul>                                                                                                                                                                                                             | <p><b>Animals including humans Life cycles and health (6 lessons)</b> Studying the life cycles of various animals, children learn what animals need to survive and how they change over time. Pupils collect data that allows them to observe changes in their peers, while also developing their ability to take measurements and record data. They consider how scientific knowledge helps people to make healthy choices.</p> <p><b>Lesson 1 – The human life cycle</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>To identify different stages of the human life cycle.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can identify animal offspring.</li> <li>I can order the human life cycle.</li> </ul> | <p>adult<br/>air<br/>baby<br/>basic needs<br/>butterfly<br/>child<br/>carbohydrates<br/>caterpillar<br/>dairy<br/>egg<br/>exercise<br/>fitness<br/>food<br/>frog<br/>froglet<br/>fruit</p> |

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|  | <p>Lesson 3 – <b>Animals, including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Notice that animals, including humans, have offspring which grow into adults.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Asking simple questions and recognising that they can be answered in different ways.</li> <li>Observing closely, using simple equipment.</li> <li>Performing simple tests.</li> <li>Identifying and classifying.</li> <li>Using their observations and ideas to suggest answers to questions.</li> <li>Gathering and recording data to help in answering questions.</li> </ul> <p>Lesson 4 – <b>Animals, including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</li> </ul> <p><b>Working scientifically</b></p> | <ul style="list-style-type: none"> <li>I can describe how humans change.</li> </ul> <p><b>Lesson 2 – Life cycles</b></p> <p><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>To know which offspring come from which parent animal.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can identify stages of animal life cycles.</li> <li>I can match the stages of animal life cycles with the correct animal.</li> <li>I can order the stages of an animal's life cycle.</li> </ul> <p><b>Lesson 3 – Growth</b></p> <p><b>Learning objective</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To observe and measure growth in humans.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To use simple measuring equipment.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can apply my understanding of the human life cycle.</li> <li>I can explain how humans change.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can read a scale in centimetres.</li> <li>I can find the start of a scale.</li> <li>I can read my measurements.</li> </ul> <p><b>Lesson 4 – Survival</b></p> <p><b>Learning objective</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify and list the basic needs for survival for humans and animals.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To use secondary sources to research.</li> </ul> | <p>germs<br/>growth<br/>health<br/>height<br/>hygiene<br/>lamb<br/>life cycle<br/>live young<br/>measure<br/>offspring<br/>oils<br/>proteins<br/>pupa<br/>sheep<br/>spawn<br/>spreads<br/>stage<br/>survive<br/>tadpole<br/>teenager<br/>toddler<br/>vegetables<br/>water</p> |
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Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment.
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.
- Gathering and recording data to help in answering questions.

#### Lesson 5 – **Animals, including humans**

Pupils should be taught to:

- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment.
- Performing simple tests.

#### **Success criteria**

##### **Knowledge**

- I can explain the three things animals need to survive.
- I can explain how a particular species survives.

##### **Working scientifically**

- I can find the information I need from a source.
- I can present research as a poster.

#### **Lesson 5 – Exercise and hygiene**

##### **Learning objective**

- To recognise the importance of exercise and personal hygiene.

Working scientifically.

- To make observations over time.

##### **Success criteria**

- I can describe how germs spread.
- I can explain why washing hands or changing clothes is important.

##### **Working scientifically**

- I can use a results table.
- I can record results each day.

#### **Lesson 6 – Balanced diet**

##### **Learning objective**

- To identify how to have a balanced diet.

Working scientifically.

- To interpret collected results.

##### **Success criteria**

- I can name foods in each group.
- I can create a balanced shopping bag.

##### **Working scientifically**

- I can recognise a pattern in data.
- I can decide whether my data answers the question.

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|                    | <ul style="list-style-type: none"> <li>Identifying and classifying.</li> <li>Using their observations and ideas to suggest answers to questions.</li> <li>Gathering and recording data to help in answering questions.</li> </ul> <p>Lesson 6 – <b>Animals, including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Asking simple questions and recognising that they can be answered in different ways.</li> <li>Observing closely, using simple equipment.</li> <li>Performing simple tests.</li> <li>Identifying and classifying.</li> <li>Using their observations and ideas to suggest answers to questions.</li> <li>Gathering and recording data to help in answering questions.</li> </ul> | <p>Y1 Spring 1 sensitive bodies, Spring 2 Comparing animals</p> <p>Key skill – curious (asking questions)</p> <p><b>Curious</b></p> |                     |
| Topic / Summer One | Lesson 1 – <b>Uses of everyday materials</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Materials Uses of everyday materials (6 lessons)</b>                                                                             | bend<br>block graph |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                          |
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|  | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Identifying and classifying.</li> </ul> <p><b>Lesson 2 – Uses of everyday materials</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</li> </ul> <p><b>Lesson 3 – Uses of everyday materials</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul> | <p>Building on their knowledge of everyday materials and their properties, pupils recognise that materials are suited to specific purposes and explore how actions such as stretching and bending affect the shape of solid objects. They compare the suitability of materials; gather and record data in tables and block graphs and use their results to answer questions. Children learn about the harmful effects of plastic and explore eco-friendly alternatives.</p> <p><b>Lesson 1 – Objects and materials</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To recognise that objects are made from materials that suit their uses.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To recognise that objects can be grouped.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can name objects with the same use that are made from different materials.</li> <li>I can name a material that is used to make objects with different uses.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can sort objects based on properties.</li> </ul> <p><b>Lesson 2 – Which material is suitable</b></p> <p><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>To recognise that objects are made from materials that suit their uses.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can describe the properties of materials.</li> <li>I can explain why a material is suitable for its object's use.</li> <li>I can explain why some materials would not be suitable for a particular use.</li> </ul> | <p>elastic<br/>fabric<br/>flexible<br/>glass<br/>material<br/>metal<br/>object<br/>plastic<br/>property<br/>pull<br/>push<br/>record<br/>rock<br/>squash<br/>stretch<br/>suitable<br/>twist<br/>wood</p> |
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#### Lesson 4 – Uses of everyday materials

Pupils should be taught to:

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Observing closely, using simple equipment.
- Performing simple tests.
- Gathering and recording data to help in answering questions.

#### Lesson 5 – Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Observing closely, using simple equipment.
- Performing simple tests.
- Using their observations and ideas to suggest answers to questions.

#### Lesson 3 – Stretch it, twist it, bend it, squash it!

#### Learning objectives

#### Knowledge

- To recognise that the shape of some solid objects can be changed.

#### Working scientifically

- To record data in a table.

#### Success criteria

#### Knowledge

- I can observe how actions change the shape of solid objects.
- I can describe what happens to objects after an action has been performed.

#### Working scientifically

- I can record my findings in a table.

#### Lesson 4 – Testing stretchiness

#### Learning objectives

#### Knowledge

- To compare the suitability of materials for particular uses.

#### Working scientifically

- To gather data and use it to answer a question.

#### Success criteria

#### Working scientifically

- I can work in a group to carry out a test.
- I can use non-standard units to measure.
- I can compare results to answer a question.

#### Key skill – Team Player

Team player

#### Lesson 5 – Testing strength

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|                    | <ul style="list-style-type: none"> <li>Gathering and recording data to help in answering questions.</li> </ul> <p><b>Lesson 6 – Uses of everyday materials</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</li> <li>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul> | <p><b>Learning objective</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To recognise that the strength of some materials can be changed.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To record data in a block graph.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can measure strength using non-standard units.</li> <li>I can label the categories on a block graph.</li> <li>I can use a block graph to answer questions.</li> </ul> <p><b>Lesson 6 – Eco-friendly materials</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To compare the suitability of materials for particular uses.</li> </ul> <p><b>Science in action</b></p> <ul style="list-style-type: none"> <li>To recognise that some materials are harmful to the environment.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can name properties of materials that make them suitable for their uses.</li> </ul> <p><b>Science in action</b></p> <ul style="list-style-type: none"> <li>I can give examples of how plastic is harmful to the environment.</li> <li>I can select environmentally friendly materials.</li> </ul> <p>Y1 Autumn 2 Everyday materials</p> <p>Key skill – Numerate</p> <p>Numerate</p> |                        |
| Topic / Summer Two | Science inventors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Marie Curie                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | X-rays and radiography |

## Science Curriculum Coverage: Key Stage Two

Expected Vocabulary. NC Objectives. Intended activities. Prior knowledge – must be revisited before new content taught

| Year Three         | Curriculum Objective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Knowledge/Activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Vocab                                                                                                                                                                                                                                                                                                                                                       |
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| Topic / Autumn One | <p>Lesson 1 – <b>Animals, including humans</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Classifying in a variety of ways to help in answering questions.</li> </ul> <p>Lesson 2 – <b>Animals, including humans</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> | <p><b>Animals including humans Movement and nutrition (6 lessons)</b> Studying the human skeleton, children identify key bones and compare them to other animals explaining the role within the body. Pupils explore how changes in muscles result in movement and the implications these discoveries have in the scientific development of prosthetic limbs. They study how energy is used by the body, what constitutes a balanced diet in humans and how research contributes to nutritionist expertise.</p> <p><b>Lesson 1 – Skeletons Learning objectives</b></p> <ul style="list-style-type: none"> <li>To explain the role of a skeleton.</li> <li>Working scientifically: To group animals based on their physical properties.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can name the three key functions of the skeleton.</li> <li>I can recall key features of a vertebrate, invertebrate, endoskeleton and exoskeleton.</li> <li>I can group animals based on their skeletons.</li> <li>I can describe the role of joints in the skeleton.</li> </ul> <p><b>Lesson 2 – The bones in our body Learning objectives</b></p> <ul style="list-style-type: none"> <li>To recognise the main bones in the body.</li> </ul> | <p>balanced diet<br/>bone<br/>carbohydrate<br/>conclude<br/>diet<br/>endoskeleton<br/>energy<br/>exoskeleton<br/>fat<br/>fibre<br/>invertebrate<br/>joint<br/>measure<br/>mineral<br/>movement<br/>muscle<br/>nutrient<br/>pelvis<br/>protection<br/>protein<br/>ribs<br/>skeleton<br/>skull<br/>spine<br/>support<br/>vertebrate<br/>vitamin<br/>water</p> |

- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units.
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language and tables.

### Lesson 3 – **Animals, including humans**

Pupils should be taught to:

- Identify that humans and some other animals have skeletons and muscles for support, protection and movement.

### Lesson 4 – **Animals, including humans**

Pupils should be taught to:

- Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.

- Working scientifically: **To measure and sort data.**

#### **Success criteria**

- I can name key bones in the human skeleton.
- I can identify the location of key bones in the human skeleton.
- **I can measure the length of different bones.**
- **I can sort the data into size order.**

### **Lesson 3 – Muscles and movement**

#### **Learning objectives**

- To explain how muscles are used for movement.
- Science in action: To explore scientific advances.

#### **Success criteria**

- I can recall that there are different muscles in the body.
- **I can describe how a muscle causes movement.**
- **I can explain how scientific research has helped with prosthetics.**

### **Lesson 4 – Eating for survival**

#### **Learning objectives**

- To explain how food is an essential energy source for animals.
- Working scientifically: **To gather and compare data to answer questions.**

#### **Success criteria**

- I can recall that animals, including humans, need to eat food to survive.
- I can describe ways the body uses energy.
- I can identify how energy needs are different between people.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Using straightforward scientific evidence to answer questions or to support their findings.

**Lesson 5 – Animals, including humans**

Pupils should be taught to:

- Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording findings using simple scientific language, drawings and labelled diagrams.

**Lesson 6 – Animals, including humans**

Pupils should be taught to:

- Identify that animals, including humans, need the right types and amount of nutrition, and

- I can compare the nutritional information on food packaging.

**Lesson 5 – Nutrient group**

**Learning objectives**

- To identify the main nutrient groups and their simple functions.
- Working scientifically: To record information using secondary sources.

**Success criteria**

- I can recall some of the seven nutrient groups.
- I can give examples of food that contain a particular nutrient group.
- I can explain why a particular nutrient group is essential for the body.

**Lesson 6 – Balanced diets**

**Learning objectives**

- To explain what makes a balanced diet.
- Science in action: To explore how knowledge has progressed over time and different jobs use this information.

**Success criteria**

- I can give examples of foods that make up a balanced diet.
- I can compare different meals, explaining which is more balanced.
- I can describe some changes to scientific knowledge about nutrition.
- I can identify some jobs that require knowledge of nutrition.

Y1 Spring 1 sensitive bodies, Spring 2 Comparing animals. Y2 Spring 2 Life cycles and health

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                      |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | <p>that they cannot make their own food; they get nutrition from what they eat.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>Key skill – <b>literate</b>. Using technical terms for body parts.</p> <p><b>Literate</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                      |
| <p>Topic / Autumn Two</p> | <p>Lesson 1 – <b>Forces and magnets</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Compare how things move on different surfaces.</li> <li>• Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</li> </ul> <p>Lesson 2 – <b>Forces and magnets</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Compare how things move on different surfaces.</li> <li>• Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</li> </ul> <p><b>Working scientifically</b></p> | <p><b>Forces, Earth and Space Forces and magnets (6 lessons)</b> Investigating the movement of vehicles on different surfaces, children learn about the impact of friction and compare uses and drawbacks. They broaden their experience in writing scientific methods and recording data as they investigate contact and non-contact forces. Pupils explore the properties of different magnets and use this to understand their uses.</p> <p><b>Lesson 1 – Pushes and pulls</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• To describe the effects of contact forces.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• To label a diagram using arrows and scientific vocabulary.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can define the terms <b>force</b> and <b>contact force</b>.</li> <li>• I can classify a force as a push, pull or a twist.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• I can use arrows and scientific vocabulary to show the direction of a contact force.</li> </ul> <p><b>Lesson 2 – Friction</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• To recognise the effects and uses of forces.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• To write a scientific conclusion identifying cause and effect.</li> </ul> | <p>attract<br/>contact force<br/>electromagnet<br/>force<br/>friction<br/>magnet<br/>magnetic material<br/>magnetism<br/>non-contact force<br/>non-magnetic<br/>material<br/>north pole<br/>repel<br/>south pole</p> |

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

### Lesson 3 – Forces and magnets

Pupils should be taught to:

- Compare how things move on different surfaces.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Lesson 4 – Pupils should be taught to:

- Observe how magnets attract or repel each other and attract some materials and not others.

### Success criteria

#### Knowledge

- I can list the effects of forces.
- I can define the term friction.
- I can list some uses of friction.
- I can describe how surface roughness affects friction.

#### Working scientifically

- I can use evidence to support my conclusion.

Key skill – communicator



### Lesson 3 – Investigating friction

#### Learning objectives

#### Knowledge

- To interpret how and why things move differently on different surfaces.

#### Working scientifically

- To plan an investigation using variables.

#### Success criteria

#### Knowledge

- I can describe and compare how things move on rough and smooth surfaces.
- I can explain why things move differently on rough and smooth surfaces.

#### Working scientifically

- I can identify the variables to change, measure and control.

Key skill – Valuing (others' predictions)



### Lesson 4 – Magnets

#### Learning objectives

- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.
- Describe magnets as having two poles.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Making systematic and careful observations.
- Using straightforward scientific evidence to answer questions or to support their findings.

**Lesson 5 – Forces and magnets**

Pupils should be taught to:

- Observe how magnets attract or repel each other and attract some materials and not others.
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording findings using simple scientific language, drawings, labelled

**Knowledge**

- To describe the effects of magnets.

**Working scientifically**

- To write a method.

**Success criteria**

**Knowledge**

- I can define the terms **magnetism, magnetic material and non-magnetic material.**
- I can describe the poles of a magnet and how they attract and repel.
- I can name some magnetic metals.

**Working scientifically**

- I can write a method to explain how to use a magnet to classify materials as magnetic or non-magnetic.

**Lesson 5 – Investigating magnet strength**

**Learning objectives**

**Knowledge**

- To compare the properties of different types of magnets.

**Working scientifically**

- To display data using a bar chart.

**Success criteria**

**Knowledge**

- I can predict whether two magnets will attract or repel.
- I can name some examples of magnets.
- I can compare the strength of different magnets.

**Working scientifically**

- I can label the axes of a bar chart.
- I can draw the bars accurately.

**Lesson 6 – Uses of magnets**

**Learning objectives**

**Knowledge**

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|                    | <p>diagrams, keys, bar charts, and tables.</p> <p><b>Lesson 6 – Forces and magnets</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</li> <li>• Observe how magnets attract or repel each other and attract some materials and not others.</li> <li>• Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</li> <li>• Describe magnets as having two poles.</li> <li>• Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</li> </ul> | <ul style="list-style-type: none"> <li>• To explain the uses of magnets.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• To research the uses of magnets.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can list some of the uses of magnets.</li> <li>• I can describe some of the uses of magnets.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• I can identify key information from a source.</li> <li>• I can use more than one source to research.</li> </ul> <p>Key skill – Numerate</p> <p><b>Numerate</b></p> |            |
| Topic / Spring One | Lesson 1 – <b>Rocks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Materials Rocks and soil (6 lessons)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | absorbency |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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|  | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</li> </ul> <p><b>Lesson 2 – Rocks</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</li> </ul> | <p>Studying rocks and their properties, children learn how to classify rocks and identify how they were formed. They look at the work of paleontologists to learn about fossil formation and use models to explore how fossils tell us about the past. Pupils investigate the physical properties of rocks and link these to their particular uses. Pupils also explore soil formation, separate soil using a sedimentation jar and test soil drainage.</p> <p><b>Lesson 1 – Rocks: Appearance</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To group rocks using their appearance.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To observe the appearance of rocks closely, using a magnifying glass.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define the term 'rock'.</li> <li>I can describe the appearance of different rocks.</li> <li>I can identify crystals and grains.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can use a magnifying glass correctly.</li> <li>I can observe the appearance of a rock in detail.</li> </ul> <p><b>Lesson 2 – Rocks: Physical properties</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To group rocks using their physical properties.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To make predictions, suggest improvements and explain observations over time.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can group rocks by their absorbency.</li> </ul> | <p>acid rain<br/>bone<br/>clay<br/>clay soil<br/>crystal<br/>earthworm<br/>era<br/>fossil<br/>fossil record<br/>grain<br/>hard<br/>hardness<br/>impermeable<br/>igneous rock<br/>imprint<br/>lava<br/>loam soil<br/>magma<br/>metamorphic rock<br/>mineral<br/>molten rock<br/>organic matter<br/>paelantologist<br/>peaty soil<br/>permeable<br/>rate<br/>rock<br/>sandy<br/>sandy soil<br/>sediment<br/>sedimentary<br/>sedimentation<br/>silt<br/>soft<br/>soil</p> |
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### Lesson 3 – Rocks

Pupils should be taught to:

- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

### Lesson 4 – Rocks

Pupils should be taught to:

- Describe in simple terms how fossils are formed when things that have lived are trapped within rock.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Using straightforward scientific evidence to answer questions or to support their findings.

- I can group rocks by their reaction to acid rain (vinegar).
- I can group rocks by their hardness.

#### Working scientifically

- I can use my results to choose the appropriate rock type for a specific use.
- I can use my results to suggest a better choice of rock for a specific use.
- I can use my results to predict how a rock will be affected by the weather.

### Lesson 3 – Rocks and fossils

#### Learning objectives

##### Knowledge

- To describe the process of fossil formation.

##### Working scientifically

- To present research on fossil formation.

##### Success criteria

##### Knowledge

- I can list the different factors that break down rocks.
- I can use a model to demonstrate fossil formation.
- I can use a short film to sequence the steps of fossil formation.

##### Working scientifically

- I can research fossil formation using a single source.
- I can present research in short film form.

### Lesson 4 – Fossils and palaeontology

#### Learning objectives

##### Knowledge

- To identify fossils and group rocks accordingly.

##### Working scientifically

- To use the fossil record to answer questions about the past.

**Lesson 5 – Rocks**

Pupils should be taught to:

- Recognise that soils are made from rocks and organic matter.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

**Lesson 6 – Rocks**

Pupils should be taught to:

- Recognise that soils are made from rocks and organic matter.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

**Success criteria**

**Knowledge**

- I can identify fossils in rocks.
- I can group rocks that contain fossils.
- Science in action: I can describe the work of a palaeontologist.

**Working scientifically**

- I can use a model to determine the relative age of a fossil.
- I can use the fossil record to suggest how a living thing has changed over time.
- I can use the fossil record to suggest what living things were around in a certain era.

**Lesson 5 – Soil formation**

**Learning objectives**

**Knowledge**

- To compare soils and how they were formed.

**Working scientifically**

- To record the drainage rate for different soils in a bar chart.

**Success criteria**

**Knowledge**

- I can name some different types of soil.
- I can describe some different types of soil.
- I can compare and group soils according to their appearance.

**Working scientifically**

- I can draw the bars on a bar chart.
- I can label the bars on a bar chart.

**Lesson 6 – Soil layers and earthworms**

**Learning objectives**

**Knowledge**

- To describe a soil sample using sedimentation.

**Working scientifically**

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                         |
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|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>To draw and label a diagram.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can list some of the benefits of earthworms to the soil.</li> <li>I can identify the layers in a sedimentation jar.</li> <li>I can describe the size of the particles in a sedimentation jar.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can accurately draw the layers of sediment in a sedimentation jar.</li> <li>I can accurately label the layers of sediment in a sedimentation jar.</li> </ul> <p>Y1 Autumn 2 Everyday materials. Y2 Summer 1 Uses of everyday materials</p> <p>Key skill – Numerate</p> <p>Numerate</p>                                                              |                                                                                                                                                                                                                         |
| Topic / Spring Two | <p>Lesson 1 – <b>Light</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that they need light in order to see things and that dark is the absence of light.</li> <li>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Asking relevant questions and using different types of scientific enquiries to answer them.</li> </ul> | <p><b>Energy Light and shadows (6 lessons)</b></p> <p>Identifying examples of light sources, children learn that light is needed to see and how its absence causes darkness. Children investigate reflection and shadow formation, including how different factors affect shadows. They explore how shadows can be used to entertain in the arts and create shadow puppets to recount how different people work or experiment with light.</p> <p><b>Lesson 1 – Sources of light</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To explain the role of light sources.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To plan and draw a results table.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> | <p>cast a shadow<br/>dangerous<br/>light source<br/>luminous<br/>non-luminous<br/>opaque<br/>protect<br/>reflect<br/>reflection<br/>reflective (shiny)<br/>shadow<br/>shadow puppet<br/>translucent<br/>transparent</p> |

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

### Lesson 2 – Light

Pupils should be taught to:

- Notice that light is reflected from surfaces.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

### Lesson 3 – Light

- I can recall examples of light sources and those that do not give out light.
- I can describe ways to protect my eyes from harm.
- I can recall that darkness is the absence of light.

#### Working scientifically

- I can recall what information needs recording to decide the number of columns.
- I can suggest suitable headings for the results table.
- I can record information in the correct columns.

### Lesson 2 – What is reflection?

#### Learning objective

##### Knowledge

- To compare light reflecting on different surfaces.

##### Success criteria

##### Knowledge

- I can describe what happens when light reflects.
- I can give examples of reflective surfaces or materials.
- I can describe factors that may affect the quality of a reflected image.

### Lesson 3 – Where do shadows come from?

#### Learning objectives

##### Knowledge

- To recognise which materials cast a shadow.

##### Working scientifically

- To ask testable questions and plan how to answer them.

##### Success criteria

Pupils should be taught to:

- Recognise that shadows are formed when the light from a light source is blocked by an opaque object.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Setting up simple practical enquiries, comparative and fair tests.
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

#### **Lesson 4 – Light**

Pupils should be taught to:

- Recognise that shadows are formed when the light

#### **Knowledge**

- I can describe how shadows form.
- I can identify patterns between groups of materials and the shadows produced.
- I can recall factors that affect the way a shadow appears.

#### **Working scientifically**

- I can identify if a question is testable.
- I can explain whether a question is testable or not.
- I can plan ways to answer a testable question.

Key skill – Communicator



#### **Lesson 4 – Shadows throughout the day**

##### **Learning objectives**

##### **Knowledge**

- To summarise how shadows change throughout the day.

##### **Working scientifically**

- To evaluate a method.

##### **Success criteria**

##### **Knowledge**

- I can recall what causes shadows to change throughout the day.
- I can describe the pattern of changing shadows throughout the day.

##### **Working scientifically**

- I can identify something as an advantage or disadvantage of a method.
- I can explain why something is an advantage or disadvantage of a method.
- I can suggest an improvement to the experiment.

from a light source is blocked by an opaque object.

- Find patterns in the way that the size of shadows change.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Setting up simple practical enquiries, comparative and fair tests.
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

### **Lesson 5 – Investigating shadows**

#### **Learning objectives**

##### **Knowledge**

- To investigate how the distance of the light source affects the size of its shadow.

##### **Working scientifically**

- To find patterns in data and form conclusions.

##### **Success criteria**

##### **Knowledge**

- I can name factors that change the size of a shadow.
- I can describe how the light source's distance affects the shadow's size.

##### **Working scientifically**

- I can describe patterns in data.
- I can quote values as evidence of patterns in data.
- I can identify odd results that do not fit the pattern.
- I can use patterns to make predictions for missing data.

### **Lesson 6 – Using light and shadows**

#### **Learning objectives**

##### **Knowledge**

- To tell a story using shadow puppets.

##### **Science in action**

- To recall how different people work with light and shadows.

##### **Success criteria**

##### **Knowledge**

- I can explain why a particular material is appropriate to make a shadow puppet.
- I can use my knowledge of shadows to animate a shadow puppet.

##### **Science in action**

- Using straightforward scientific evidence to answer questions or to support their findings.

#### Lesson 5 – **Light**

Pupils should be taught to:

- Recognise that shadows are formed when the light from a light source is blocked by an opaque object.
- Find patterns in the way that the size of shadows change.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Setting up simple practical enquiries, comparative and fair tests.
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- Gathering, recording, classifying and presenting data in a variety of ways

- I can name different examples of people who work with light and shadows.
- I can describe how different people work with light and shadows.

Key skill – Numerate and creative

Numerate

Creative

to help in answering questions.

- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Using straightforward scientific evidence to answer questions or to support their findings.

**Lesson 6 – Light**

Pupils should be taught to:

- Recognise that shadows are formed when the light from a light source is blocked by an opaque object.
- Find patterns in the way that the size of shadows change.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                             |
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|                    | <ul style="list-style-type: none"> <li>Identifying differences, similarities or changes related to simple scientific ideas and processes.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                             |
| Topic / Summer One | <p><b>Lesson 1 – Plants</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Asking relevant questions and using different types of scientific enquiries to answer them.</li> <li>Setting up simple practical enquiries, comparative and fair tests.</li> </ul> <p><b>Lesson 2 – Plants</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</li> <li>Explore the requirements of plants for life and growth (air, light, water,</li> </ul> | <p><b>Plants Plant reproduction (6 lessons)</b><br/>Building on their prior knowledge of plant structures, children describe the functions of named parts and use evidence to explain their significance in plant development. Pupils investigate factors that may affect plant growth and how water is transported. They explore how seeds vary and create models to show seed dispersal methods.</p> <p><b>Key skill – creative</b></p> <p><b>Creative</b></p> <p><b>Lesson 1 – Plant growth</b><br/><b>Learning objective</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify the growth and survival needs of plants.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To pose relevant questions.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can identify that plants need air, water, light, nutrients and room to grow.</li> <li>I can describe how these needs vary in some plants.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can identify reasons a question may not be testable in the classroom.</li> <li>I can describe how to gather evidence to answer a testable question.</li> </ul> | <p>absorb<br/>air<br/>animal dispersal<br/>carrying<br/>conclude<br/>disperse<br/>dropping<br/>eating<br/>evaluate<br/>female<br/>flower<br/>fruit<br/>germination<br/>improve<br/>leaves<br/>male<br/>nutrients<br/>petal<br/>pollen<br/>pollination<br/>roots<br/>soil<br/>seed<br/>seed formation<br/>shaking<br/>space<br/>stem/trunk<br/>sunlight<br/>support<br/>testable<br/>transport<br/>water</p> |

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|  | <p>nutrients from soil, and room to grow) and how they vary from plant to plant.</p> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• Setting up simple practical enquiries, comparative and fair tests.</li> <li>• Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</li> </ul> <p><b>Lesson 3 – Plants</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Investigate the way in which water is transported in plants.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• Asking relevant questions and using different types of scientific enquiries to answer them.</li> <li>• Setting up simple practical enquiries, comparative and fair tests.</li> <li>• Making systematic and careful observations and, where appropriate, taking accurate measurements</li> </ul> | <ul style="list-style-type: none"> <li>• I can pose a testable question.</li> </ul> <p><b>Lesson 2 – Structure and function</b><br/><b>Learning objective</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• To describe the relationship between structure and function in plants.</li> </ul> <p><b>Working scientifically</b><br/>• To design simple results tables.</p> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can identify parts of flowering plants.</li> <li>• I can describe the function of each part.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• I can describe the purpose of a table.</li> <li>• I can give a table a heading.</li> <li>• I can design a table for gathering results.</li> </ul> <p><b>Lesson 3 – Transporting water</b><br/><b>Learning objective</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• To investigate how water is transported in plants.</li> </ul> <p><b>Working scientifically</b><br/>• To plan a simple enquiry.</p> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can label parts of the plant involved in water transport.</li> <li>• I can identify the functions of the stem.</li> <li>• I can describe how water travels through a plant.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• To suggest what observations to make and how long to make them for.</li> <li>• To decide on equipment that might be useful.</li> </ul> | <p>water dispersal<br/>wind dispersal</p> |
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using standard units, using a range of equipment, including thermometers and data loggers.

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Using straightforward scientific evidence to answer questions or to support their findings.

#### Lesson 4 – Plants

Pupils should be taught to:

- Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

#### Lesson 4 – Flowers

##### Learning objective

##### Knowledge

- To explore the role of flowers in the life cycle of a plant.

##### Working scientifically

- To complete, read and interpret data in a bar chart.

##### Success criteria

##### Knowledge

- I can describe the plant life cycle.
- I can identify the features of flowers.
- I can describe the role of flowers in pollination and fertilisation.

##### Working scientifically

- I can identify the value of a bar in a bar chart.
- I can complete a bar chart.

#### Lesson 5 – Evaluating an enquiry

##### Learning objective

##### Knowledge

- To apply knowledge of plant life and growth.

##### Working scientifically

- To identify and suggest changes to an enquiry.

##### Success criteria

##### Knowledge

- I can identify the effects of different variables on plant growth.
- I can apply my knowledge of plant growth to draw a conclusion.

##### Working scientifically

- I can say whether a step in a method was good practice.
- I can identify steps that were difficult to control.
- I can comment on the quality of the results.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

**Lesson 5 – Plants**

Pupils should be taught to:

- Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

**Key skill (valuing others' predictions)****Valuing****Lesson 6 – Seed dispersal****Learning objective****Knowledge**

- To explore seed dispersal methods.

**Working scientifically**

- To use results to draw conclusions.

**Success criteria****Knowledge**

- I can name methods of seed dispersal.
- I can group seeds based on their method of dispersal.

**Working scientifically**

- I can identify a pattern in the results.
- I can identify results that don't fit the pattern.
- I can use the results as evidence.

Y1 Summer 1 Introduction to plants. Y2 Spring 1 Plant growth

**Guided Reading – Life Cycle of a Plant (Poem)****Key skill – Numerate****Numerate**

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Identifying differences, similarities or changes related to simple scientific ideas and processes.

#### Lesson 6 – **Plants**

Pupils should be taught to:

- Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Using results to draw simple conclusions, make

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|                    | <p>predictions for new values, suggest improvements and raise further questions.</p> <ul style="list-style-type: none"> <li>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>Using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                          |
| Topic / Summer Two | Science inventors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Sir Isaac Newton                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Forces, push, pull, friction, Sir Isaac Newton                                                                                                                                                                                                           |
| Year Four          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                          |
| Topic / Autumn One | <p>Lesson 1 – <b>Humans, including animals</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the simple functions of the basic parts of the digestive system in humans.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Using results to suggest improvements and raise further questions.</li> </ul> <p>Lesson 2 – <b>Science Animals, including humans</b></p> <p>Pupils should be taught to:</p> | <p><b>Animals including humans Digestion and food (6 lessons)</b></p> <p>Using models, children describe the function of key organs in the digestive system. Pupils identify the types of human teeth to create their own model and investigate factors that impact our dental health. They compare human teeth to other animals' and consider this in the light of prior knowledge about predators, prey and food chains. Children take on the role of a naturalist investigating animal faeces for clues about diet, digestion and dentition.</p> <p><b>Lesson 1 – The human digestive system</b></p> <p><b>Learning objectives</b></p> <ul style="list-style-type: none"> <li>To describe the function of the human digestive system.</li> <li>Working scientifically: To evaluate a model.</li> </ul> <p><b>Success criteria</b></p> | <p>absorb<br/>canine<br/>carnivore<br/>digest<br/>faeces<br/>food chain<br/>herbivore<br/>incisor<br/>large intestine<br/>molar<br/>mouth<br/>oesophagus<br/>omnivore<br/>predator<br/>premolar<br/>prey<br/>producer<br/>saliva<br/>small intestine</p> |

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|  | <ul style="list-style-type: none"> <li>Identify the different types of teeth in humans and their simple functions.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Identifying differences, similarities or changes related to simple scientific ideas and processes.</li> </ul> <p>Lesson 3 –<b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Setting up simple practical enquiries and fair tests.</li> <li>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units.</li> <li>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</li> <li>Recording findings using simple tables.</li> <li>Reporting on findings from enquiries.</li> <li>Using results to suggest improvements and raise further questions.</li> </ul> | <ul style="list-style-type: none"> <li>I can list the main organs of the human digestive system.</li> <li>I can describe the function of the main organs of the digestive system.</li> <li>I can explain how a model has been used to show a part of the digestive system.</li> <li>Working scientifically: I can identify a weakness in the model used to represent the digestive system.</li> </ul> <p><b>Lesson 2 – Human teeth</b><br/><b>Learning objectives</b></p> <ul style="list-style-type: none"> <li>To recognise the different types of human teeth and their roles in eating.</li> <li>Science in action: To describe real observation methods and evidence collected.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can recall the four types of human teeth.</li> <li>I can explain what the different teeth are used for.</li> <li>Science in action: I can identify how scientists find out about teeth.</li> </ul> <p><b>Lesson 3 – Investigating dental hygiene</b><br/><b>Learning objectives</b></p> <ul style="list-style-type: none"> <li>To explain how to care for our teeth.</li> <li>Working scientifically: To plan an enquiry by considering which variables should be changed, measured and controlled.</li> <li>Science in action: To determine why scientists need to work collaboratively and evaluate experiments.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can recall factors that damage teeth.</li> <li>I can identify the best toothbrush to use when brushing your teeth.</li> <li>Working scientifically: I can plan a fair test by selecting which variables need to be</li> </ul> | <p>stomach</p> |
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**Lesson 4 –Animals, including humans**

Pupils should be taught to:

- Identify the different types of teeth in humans and their simple functions.
- Construct and interpret a variety of food chains, identifying producers, predators and prey.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Gathering, recording and classifying data in a variety of ways to help in answering questions.

**Lesson 5 – Animals, including humans**

Pupils should be taught to:

- Construct and interpret a variety of food chains, identifying producers, predators and prey.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording findings using charts.
- Reporting on findings from enquiries, including oral and written explanations,

changed, measured and controlled in an experiment.

- Science in action: I can describe some steps involved in real scientific testing.

Key skill – communicator. Explaining how to look after teeth.



**Lesson 4 – Teeth of carnivores, herbivores and omnivores**

**Learning objectives**

- To recognise that differences in teeth relate to an animal's diet.
- Working scientifically: To classify animals based on their diet.

**Success criteria**

- I can describe what different types of teeth are used for.
- I can recall different types of animal diets.
- I can construct a food chain.
- Working scientifically: I can use evidence when classifying animals.

**Lesson 5 – Producers, predators and prey in food**

**Learning objectives**

- To recognise producers, predators and prey in food chains.
- Working scientifically: To analyse trends in line graphs and form conclusions using scientific knowledge.

**Success criteria**

- I can identify a producer, a predator and prey.
- I can explain population changes using scientific ideas.

**Working scientifically:**

presentations of results and conclusions.

- Using results to draw simple conclusions and make predictions for new values.

### Lesson 6 – **Animals, including humans**

Pupils should be taught to:

- Describe the simple functions of the basic parts of the digestive system in humans.
- Identify the different types of teeth in humans and their simple functions.
- Identify producers, predators and prey.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language and tables.
- Reporting on findings from enquiries, including oral and written explanations or presentations of results and conclusions.
- Using results to draw simple conclusions.

- I can begin to analyse predator-prey graphs.
- I can predict missing values from data.

### **Lesson 6 – Poo clues**

#### **Learning objectives**

- To recognise that animal poo can give us clues about digestion, teeth and diet.
- Working scientifically: To construct a results table for recording observations.

#### **Success criteria**

- I can describe what a herbivore, carnivore and omnivore are.
- I can look for clues in poo.
- I can explain why poo is useful evidence.

**Working scientifically:** I can draw a results table and record observations.

Y1 Spring 1 sensitive bodies, Spring 2 Comparing animals. Y2 Spring 2 Life cycles and health. Y3 Autumn 1 Movement and nutrition

Key skill – Numerate and Communicator

Numerate

Communicator

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|                    | <ul style="list-style-type: none"> <li>Using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                              |
| Topic / Autumn Two | <p>Lesson 1 – <b>Electricity</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify common appliances that run on electricity.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</li> <li>Recording findings using simple scientific language and tables.</li> </ul> <p>Lesson 2 – <b>Electricity</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.</li> </ul> | <p><b>Energy - Electricity and circuits (6 lessons)</b><br/>Exploring appliances that use electricity in their setting, children learn how to work with electricity safely and build circuits. Pupils investigate electrical conductors and insulators and explore the relationship between the number of bulbs and bulb brightness. Real scenarios and historical discoveries inform children about scientific progression and home safety.</p> <p><b>Lesson 1 – Using electricity</b><br/><b>Learning objectives</b></p> <ul style="list-style-type: none"> <li>To recognise how electrical appliances are powered.</li> <li>Working scientifically: <b>To record and classify qualitative data.</b></li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can identify if something is an electrical appliance or not.</li> <li>I can classify an electrical appliance as mains or battery-powered.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li><b>I can record results under the correct headings in a table.</b></li> <li>Working scientifically: I can group electrical appliances based on their power supply.</li> </ul> <p><b>Lesson 2 – Building circuits</b><br/><b>Learning objectives</b></p> <ul style="list-style-type: none"> <li>To construct an electrical circuit.</li> <li>Working scientifically: To draw a scientific diagram.</li> </ul> | <p>ammeter<br/>appliance<br/>battery<br/>bulb<br/>buzzer<br/>cell<br/>circuit<br/>component<br/>electrical conductor<br/>electrical insulator<br/>electricity<br/>hazard<br/>mains<br/>material<br/>motor<br/>power source<br/>precaution<br/>property<br/>safety<br/>series circuit<br/>switch<br/>wire</p> |

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording findings using simple scientific diagrams.

### Lesson 3 –Electricity

Pupils should be taught to:

- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.

### Lesson 4 – Electricity

Pupils should be taught to:

- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- Recognise some common conductors and insulators, and associate metals with being good conductors.

### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

### Success criteria

- I can identify components in a circuit.
- I can build a circuit using a battery and a bulb.
- I can explain how to test if a circuit works or not.

### Working scientifically:

- I can draw symbols for the electrical components.
- Working scientifically: I can draw a circuit diagram.

### Lesson 3 – Switching on and off

#### Learning objective

- To explain the use of switches in a circuit.

#### Success criteria

- I can identify the symbol for a switch.
- I can predict whether a circuit will work by observing whether the switch is open or closed.
- I can explain how a switch works.
- I can explain why switches are useful.

### Lesson 4 – Investigating electrical conductors and insulators

#### Learning objectives

- To explain the use of materials as electrical conductors or insulators.
- Working scientifically: To write a method.

#### Success criteria

- I can describe how to test whether a material is a good electrical conductor or insulator.
- I can recall which groups of materials are good electrical conductors or insulators.

**Working scientifically:** I can write a safe method in chronological order, using clear instructions and appropriate equipment.

- Setting up simple practical enquiries, comparative and fair tests.
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Identifying differences, similarities or changes related to simple scientific ideas and processes.

#### Lesson 5 – Electricity

Pupils should be taught to:

- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is

#### Lesson 5 – Investigating bulb brightness

##### Learning objectives

- To investigate what affects bulb brightness.
- Working scientifically: To pose questions and plan ways to test them.

##### Success criteria

- I can describe how the number of bulbs in a series circuit affects bulb brightness.
- I can explain why bulb brightness is affected by the number of bulbs.
- Working scientifically: I can pose a question about bulbs in an electrical circuit.
- Working scientifically: I can suggest ways of answering a question.
- Working scientifically: I can explain why a question is testable.

#### Lesson 6 – Electrical safety

##### Learning objectives

- To explain how to be safe around electricity.
- Science in action: To explore how scientific advances inform safety advice.

##### Success criteria

- I can describe precautions for working safely with electricity.
- I can use scientific knowledge to explain why safety rules are in place.
- Science in action: I can recall that inventing new materials or appliances may change safety advice.

Key skill – Numerate

Numerate

part of a complete loop with a battery.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Setting up simple practical enquiries, comparative and fair tests.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Identifying differences, similarities or changes related to simple scientific ideas and processes.

Lesson 6 – **Electricity**

Pupils should be taught to:

- Identify common appliances that run on electricity.
- Identifying and naming basic parts of a circuit, including cells, wires, bulbs, switches and buzzers.
- Recognise some common conductors and insulators,

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|                           | <p>and associate metals with being good conductors.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>Topic / Spring One</p> | <p>Lesson 1 – <b>States of matter</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and group materials together, according to whether they are solids, liquids or gases.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Asking relevant questions and using different types of scientific enquiries to answer them.</li> </ul> <p>Lesson 2 – <b>States of matter</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and group materials together, according to whether they are solids, liquids or gases.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Use results to draw simple conclusions.</li> </ul> <p>Lesson 3 – <b>States of matter</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Observe that some materials change state when they are heated or</li> </ul> | <p><b>Materials States of matter (6 lessons)</b><br/>Investigating the properties of solids, liquids and gases, children learn about the different states of matter. They explore changes of state using relatable examples and use this to explain changes to water through the water cycle. Pupils investigate the relationship between temperature and rate of evaporation while broadening their experience of working scientifically.</p> <p><b>Lesson 1 – Solids</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify solids using their properties.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To ask relevant questions about the properties of solids.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can list the properties of solids.</li> <li>I can identify examples of solids.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can ask questions about the properties of solids.</li> <li>I can identify which questions are relevant.</li> <li>I can identify which properties to test.</li> </ul> <p><b>Lesson 2 – Liquids and gases</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify liquids and gases using their properties.</li> </ul> <p><b>Working scientifically</b></p> | <p>boiling point<br/>climate change<br/>compress<br/>condensation<br/>condensing<br/>condensing point<br/>drought<br/>evaporating<br/>evaporation rate<br/>flood<br/>force<br/>freezing<br/>freezing point<br/>gas<br/>gaseous<br/>liquid<br/>matter<br/>melting<br/>melting point<br/>precipitation<br/>rate<br/>solid<br/>state<br/>steam<br/>temperature<br/>thermometer<br/>the water cycle<br/>volume<br/>water vapour</p> |

cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers.

#### **Lesson 4 – States of matter**

Pupils should be taught to:

- Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Use results to make predictions for new values.

- To use results to draw simple conclusions about the properties of liquids.

#### **Success criteria**

##### **Knowledge**

- I can list the properties of liquids and gases.
- I can identify examples of liquids and gases.

##### **Working scientifically**

- I can make careful observations.
- I can use these observations to draw simple conclusions.

#### **Lesson 3 – Melting and freezing**

##### **Learning objectives**

##### **Knowledge**

- To describe melting and freezing.

##### **Working scientifically**

- To use thermometers to take accurate measurements before and after melting.

#### **Success criteria**

##### **Knowledge**

- I can describe the conditions needed for melting and freezing.
- I can describe the property changes as a material melts or freezes.
- I can name the start and end states when melting and freezing materials.

##### **Working scientifically**

- I can use a thermometer accurately.
- I can read a thermometer accurately.

#### **Lesson 4 – Condensing and evaporating**

##### **Learning objectives**

##### **Knowledge**

- To describe condensing and evaporating.

##### **Working scientifically**

- To make predictions for new values about evaporation rates.

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|  | <p>Lesson 5 – <b>States of matter</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Recording findings using simple scientific language and labelled diagrams.</li> </ul> <p>Lesson 6 –<b>States of matter</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Gathering and presenting data in a variety of ways to help in answering questions.</li> </ul> | <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can describe the conditions needed for evaporating and condensing.</li> <li>I can describe the property changes as a material evaporates or condenses.</li> <li>I can name the start and end states when evaporating and condensing materials.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can predict how temperature will affect evaporation rates.</li> <li>I can predict how wind will affect evaporation rates.</li> </ul> <p><b>Lesson 5 – The water cycle</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe the different stages of the water cycle.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To record the stages of the water cycle using a labelled diagram.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can name the stages of the water cycle.</li> <li>I can order the stages of the water cycle.</li> <li>I can describe the changes of state that occur during the water cycle.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can draw a diagram using key information.</li> <li>I can label a diagram with keywords.</li> </ul> <p><b>Lesson 6 – Climate change and the water cycle.</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe how temperature affects evaporation rates and the water cycle.</li> </ul> |  |
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|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To research climate change and the water cycle.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can describe the effect of climate change on temperature.</li> <li>I can link temperature change to evaporation rates.</li> <li>I can describe how climate change affects the water cycle.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can identify key information from a source.</li> <li>I can use more than one source to research.</li> </ul> <p>Y1 Autumn 2 Everyday materials. Y2 Summer 1 Uses of everyday materials. Y3 Spring 1 Rocks and Soils</p> <p>Key skill – team player. Researching in groups</p> <p>Team player</p> |                                                                                                                                                                                                                                   |
| Topic / Spring Two | <p><b>Lesson 1 – Sound</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify how sounds are made, associating some of them with something vibrating.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment,</li> </ul> | <p><b>Energy Sound and vibrations (6 lessons)</b></p> <p>Exploring different ways of producing sounds, children learn about the relationship between vibrations and what they hear. They study dolphins and whales to develop their understanding of how sound travels between objects and investigate the role of insulation to protect our ears. Pupils explore how pitch and volume can be altered and make their own musical instruments to demonstrate these principles.</p> <p><b>Lesson 1 – Vibrations</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To describe how sounds are made.</li> </ul> <p><b>Working scientifically:</b></p>                                                                                                                  | <p>air<br/>decibels (dB)<br/>decibel meter<br/>ear<br/>eardrum<br/>ear protectors<br/>gas<br/>hertz (Hz)<br/>high pitch<br/>insulator of sound<br/>liquid<br/>loud<br/>low pitch<br/>matter<br/>medium<br/>musical instrument</p> |

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|  | <p>including thermometers and data loggers.</p> <p><b>Lesson 2 – Sound</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that vibrations from sounds travel through a medium to the ear.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</li> </ul> <p><b>Lesson 3 – Sound</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</li> </ul> | <ul style="list-style-type: none"> <li>To observe closely how different instruments create a sound.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>I can define the term 'vibration'.</li> <li>I can identify the part of an instrument making a sound.</li> <li>I can identify how different instruments make a sound.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>I can see, hear and feel different sounds.</li> <li>I can record my observations in a data table.</li> </ul> <p><b>Lesson 2 – Sound waves</b><br/><b>Learning objective</b><br/><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To describe how sounds are heard through different mediums.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>To research how whales and dolphins communicate underwater.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>I can describe how a sound wave travels through the air to the ear.</li> <li>I can compare how sound travels through different mediums.</li> <li>I can explain why sound travels faster and further in water than air.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>I can use an article to research how whales and dolphins communicate.</li> <li>I can identify the important information.</li> <li>I can answer questions using my research.</li> </ul> <p><b>Lesson 3 – Volume</b><br/><b>Learning objective</b><br/><b>Knowledge:</b></p> | <p>pitch<br/>quiet<br/>solid<br/>sound<br/>sound proofing<br/>vibration<br/>volume</p> |
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#### Lesson 4 – Sound

Pupils should be taught to:

- Recognise that sounds get fainter as the distance from the sound source increases.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Setting up simple practical enquiries, comparative and fair tests.

#### Lesson 5 – Sound

Pupils should be taught to:

- Find patterns between the pitch of a sound and features of the object that produced it.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

#### Lesson 6 – Sound

Pupils should be taught to:

- Recognise that vibrations from sounds travel through a medium to the ear.

#### Working scientifically

- To describe the relationship between vibration strength and volume.

#### Working scientifically:

- To present results using a bar chart.

#### Success criteria

#### Knowledge:

- I can define the term 'volume'.
- I can identify the unit of volume.
- I can describe how to change the volume of different musical instruments.

#### Working scientifically:

- I can draw bars on a bar chart.
- I can read the bars on a bar chart.
- I can use data to answer questions.

#### Lesson 4 – Volume and distance

#### Learning objective

#### Knowledge:

- To describe the relationship between volume and distance.

#### Working scientifically:

- To suggest which variables to measure and for how long.

#### Success criteria

#### Knowledge:

- I can describe what happens to the volume of a sound as the distance from the source increases and decreases.
- I can estimate the comparative loudness of a sound based on its volume and distance.

#### Working scientifically:

- I can identify which variables should be measured.
- I can identify how to measure these variables.
- I can identify how long to measure these variables for.

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

### **Lesson 5 – Pitch**

#### **Learning objective**

##### **Knowledge:**

- To describe pitch and how to change it.

##### **Working scientifically:**

- To design simple results tables.

##### **Success criteria**

##### **Knowledge:**

- I can define the term 'pitch'.
- I can identify the unit of pitch.
- I can describe how to change the pitch of different musical instruments.

##### **Working scientifically:**

- I can draw a table with two columns.
- I can put the headings in the correct place.
- I can fill data into a table.

### **Lesson 6 – Sound insulation**

#### **Learning objective**

##### **Knowledge:**

- To explain how insulating materials can be used to muffle sound.

##### **Working scientifically:**

- To identify when results or observations do not match predictions.

##### **Success criteria**

##### **Knowledge:**

- I can explain why some jobs require ear protection.
- I can describe how insulating materials can be used to protect the ears.
- I can list some examples of materials that are good insulators of sound.

##### **Working scientifically:**

- I can identify a result that does not match a prediction.
- I can suggest reasons it does not match.

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|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Y1 Autumn 2 Everyday materials. Spring 1 Sensitive bodies. Y2 Summer 1 Uses of everyday materials. Y3 Spring 1 Rocks and Soils</p> <p>Key skill – Numerate</p> <p>Numerate</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>Topic / Summer One</p> | <p><b>Lesson 1 – Living things and their habitats</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that living things can be grouped in a variety of ways.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</li> </ul> <p><b>Lesson 2 – Living things and their habitats</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that living things can be grouped in a variety of ways.</li> <li>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</li> </ul> <p><b>Working scientifically</b></p> | <p><b>Living things and their habitats Classification and changing habitats (6 lessons)</b><br/>Identifying different ways to group living things, children make classification keys to explore which grouping methods are most effective. Pupils study ways habitats change over time and understand that humans can have both positive and negative effects on their surroundings. They play the role of conservationists and design conservation pamphlets.</p> <p><b>Lesson 1 – Grouping living things Vertebrates and invertebrates</b><br/><b>Learning objective</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To group animals in various ways.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To record data in different ways.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can sort animals into groups based on shared characteristics.</li> <li>I can identify broad groups of animals (vertebrates and invertebrates).</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can record data in a Carroll diagram.</li> <li>I can record data in a Venn diagram.</li> </ul> <p><b>Lesson 2 – Grouping living things plants</b><br/><b>Learning objective</b></p> | <p>Carroll diagram<br/>classification key<br/>classify<br/>conservation<br/>conservationist<br/>deforestation<br/>earthquake<br/>endangered<br/>flood<br/>flowering plants<br/>human impact<br/>invertebrate<br/>observe<br/>nature reserve<br/>non-flowering plants<br/>pollution<br/>seasonal changes<br/>taxonomist<br/>uprooted<br/>vertebrate<br/>Venn diagram<br/>waterlogged<br/>wildfire</p> |

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

### Lesson 3 – Living things and their habitats

Pupils should be taught to:

- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

### Lesson 4 – Living things and their habitats

Pupils should be taught to:

#### Knowledge

- To group plants in various ways.

#### Working scientifically

- To apply and create classification keys.

#### Success criteria

##### Knowledge

- I can sort plants into groups based on shared characteristics.
- I can identify broad groups of plants (flowering and non-flowering).

##### Working scientifically

- I can choose appropriate questions for a classification key.
- I can use a classification key.

### Lesson 3 – Classification keys

#### Learning objective

##### Working scientifically

- To make careful observations.
- To make and use classification keys.

#### Success criteria

##### Working scientifically

- I can observe and describe the characteristics of different organisms.
- I can use a classification key to group, identify and name local living things.
- I can draw a classification key.

### Lesson 4 – Habitats and season change

#### Learning objective

##### Knowledge

- To recognise and describe different habitats and their inhabitants.

##### Working scientifically

- To gather, record, classify and present data.

#### Success criteria

##### Knowledge

- Recognise that environments can change and that this can sometimes pose dangers to living things.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.

**Lesson 5 – Living things and their habitats**

Pupils should be taught to:

- Recognise that environments can change and that this can sometimes pose dangers to living things.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Using straightforward scientific evidence to answer questions or to support their findings.

- I can recognise that different living things live in different types of habitats.
- I can describe how habitats change over time.

**Working scientifically**

- I can record observations of how a habitat changes over the seasons.
- I can effectively present my observations of how a woodland habitat changes over the seasons.

**Lesson 5 – Human impacts on habitats**

**Learning objectives**

**Knowledge**

- To recognise the impact humans can have on habitats.

**Working scientifically**

- To research using an information sheet.

**Success criteria**

**Knowledge**

- I can describe how human activities can change the environment.
- I can identify the positive and negative impacts humans can have on the environment.

**Working scientifically**

- I can identify the key information from my research.
- I can use my research to answer questions.

**Lesson 6 – Natural changes to habitats**

**Learning objective**

**Knowledge**

- To recognise the impact of natural disasters on habitats.

**Success criteria**

**Knowledge**

- I can describe how wildfires, earthquakes and floods affect habitats.

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|                    | <p>Lesson 6 – <b>Living things and their habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>I can identify some of the impacts of natural disasters on wildlife.</li> </ul> <p>Y2 Autumn 1 Habitats, Autumn 2 Microhabitats</p> <p>Key Skill – Numerate</p> <p>Numerate</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                     |
| Topic / Summer Two | Science inventors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Alexander Graham Bell                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Sound                                                                                                                                                                                                                                                                                                                                                               |
| Year Five          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                     |
| Topic / Autumn One | <p>Lesson 1 – <b>Earth and space</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>Describe the Sun, Earth and Moon as approximately spherical bodies.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> </ul> <p>Lesson 2 – <b>Earth and space</b></p> <p>Pupils should be taught to:</p> | <p><b>Forces, Earth and Space Earth and space (6 lessons)</b></p> <p>Exploring some of the key celestial bodies in our Solar System, children learn their names and compare their movements. Pupils discover the relationship between the Earth's rotation and daylight, making models to represent their knowledge. They make their own sundials and consider how and why humans' ideas about the universe have changed over time.</p> <p><b>Lesson 1 – Models of our solar system</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To compare the contributions of Ptolemy, Alhazen and Copernicus to models of the Solar system.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To pose testable questions about the solar system.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can describe the geocentric model.</li> <li>I can describe the heliocentric model.</li> <li>I can describe the shape of celestial bodies.</li> </ul> <p><b>Working scientifically</b></p> | <p>artificial satellite<br/>axis<br/>calibrate<br/>celestial bodies<br/>climate change<br/>day<br/>daytime (daylight)<br/>data<br/>Earth<br/>elliptical<br/>face<br/>first quarter moon<br/>force<br/>full moon<br/>gnomon<br/>gravity<br/>horizon<br/>Jupiter<br/>last quarter moon<br/>Mars<br/>Mercury<br/>midday<br/>moon<br/>natural satellite<br/>Neptune</p> |

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|  | <ul style="list-style-type: none"> <li>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> </ul> <p><b>Lesson 3 – Earth and space</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the movement of the Moon relative to the Earth.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> </ul> <p><b>Lesson 4 –Earth and space</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific</li> </ul> | <ul style="list-style-type: none"> <li>I can pose questions about the movement of the celestial bodies in our Solar System.</li> <li>I can identify testable questions and which enquiry type is best used to answer them.</li> <li>I can ask further questions about the Solar System.</li> </ul> <p><b>Lesson 2 – Our solar system</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe the movement and shapes of the celestial bodies in our Solar System.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To develop a model to represent the Solar System.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can name the celestial bodies in the solar system.</li> <li>I can name the force that keeps planets in their orbits.</li> <li>I can describe the orbits of celestial bodies in the Solar System.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can use a model to represent the Solar System.</li> <li>I can identify the problems with the model.</li> <li>I can make improvements to the model.</li> </ul> <p><b>Lesson 3 – The moon</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe the movement of the Moon relative to the Earth.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To design and draw a table.</li> </ul> <p><b>Success criteria</b></p> | <p>new moon<br/>night (nighttime)<br/>phase<br/>planet<br/>Pluto<br/>orbit<br/>our Solar System<br/>reflect<br/>rotate<br/>Saturn<br/>season<br/>shadow<br/>Solar System<br/>space<br/>space junk<br/>spherical<br/>star<br/>summer<br/>sundial<br/>sunrise<br/>sunset<br/>table<br/>the Sun<br/>the Moon<br/>tilt<br/>Uranus<br/>Venus<br/>winter<br/>year</p> |
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diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

#### Lesson 5 – **Earth and space**

Pupils should be taught to:

- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.

#### Lesson 6 – **Earth and space**

Pupils should be taught to:

- Describe the movement of the Moon relative to the Earth.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Using test results to make predictions to set up

#### **Knowledge**

- I can define the term 'moon'.
- I can name some of the phases of the Moon.
- I can describe the orbit of the Moon around the Earth.

#### **Working scientifically**

- I can design and draw a table to record data on moons.
- I can choose appropriate headings for a table.

#### Lesson 4 – **Day and night**

#### **Learning objectives**

#### **Knowledge**

- To explain the causes of day and night and the seasons.

#### **Working scientifically**

- To draw a diagram to explain day and night.

#### **Success criteria**

#### **Knowledge**

- I can describe how the Earth rotates on its axis.
- I can describe the tilt of the Earth.
- I can describe the orbit of the Earth around the Sun.

#### **Working scientifically**

- I can accurately shade day and night on the Earth.
- I can label the day and night and seasons diagrams.

#### Lesson 5 – **Time**

#### **Learning objectives**

#### **Knowledge**

- To devise a sundial to tell the time.

#### **Working scientifically**

- To calibrate and use a sundial to measure time.

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|                           | <p>further comparative and fair tests.</p>                                                      | <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can name the parts of a sundial.</li> <li>• I can explain how a sundial works.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• I can calibrate a sundial using a compass and torch.</li> <li>• I can use a sundial to measure time.</li> </ul> <p><b>Lesson 6 – Satellites and space junk</b></p> <p><b>Learning objectives</b></p> <p><b>Science in action</b></p> <ul style="list-style-type: none"> <li>• To describe some uses of satellites and the problems posed by space junk.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• To use temperature data to make predictions about climate change.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• I can list some of the uses of satellites.</li> <li>• I can explain why space junk poses a problem to satellites.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• I can analyse patterns in temperature data for the Earth.</li> <li>• I can predict temperature values for the Earth in the future.</li> </ul> <p>Y1 Autumn 1 Seasonal changes</p> <p>Key skill – Numerate</p> <p>Numerate</p> |                                                                        |
| <p>Topic / Autumn Two</p> | <p>Lesson 1 – <b>Properties and changes of materials</b></p> <p>Pupils should be taught to:</p> | <p><b>Materials Mixtures and separation (6 lessons)</b></p> <p>Pupils explore different types of mixtures and the different methods that can be used to separate them. They dissolve a range of substances, identify</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>control variable<br/>crystallising<br/>dissolve<br/>evaporation</p> |

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|  | <ul style="list-style-type: none"> <li>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</li> </ul> <p>Lesson 2 – <b>Properties and changes of materials</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> </ul> | <p>different solutions and investigate how temperature affects the time taken to dissolve. They design and create a water filter, sieve soil and evaporate solutions.</p> <p><b>Lesson 1 – Mixtures</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe mixtures.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To research using a range of secondary resources.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define the term <b>mixture</b>.</li> <li>I can name some common examples of mixtures.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can research a mixture to find out what substances it is made from.</li> </ul> <p><b>Lesson 2 – Sieving</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To explain the process of sieving.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To draw and annotate a diagram to explain a concept.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define the term <b>sieving</b>.</li> <li>I can describe how sieving separates mixtures.</li> </ul> | <p>evaporation method<br/>filtering<br/>insoluble<br/>mixture<br/>particle<br/>sieve<br/>sieving<br/>soluble<br/>solution<br/>variable</p> |
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|  | <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> </ul> <p>Lesson 3 – <b>Properties and changes of materials</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> </ul> <p>Lesson 4 – <b>Properties and changes of materials</b><br/>Pupils should be taught to:</p> | <ul style="list-style-type: none"> <li>I can determine when it is more effective to use sieving or magnetism to separate a mixture.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can draw and annotate a diagram to explain how sieving separates a solid-solid mixture.</li> </ul> <p><b>Lesson 3 – Filtering</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To explain the process of filtering.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To identify testable questions and how to answer them.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define the term <b>filtering</b>.</li> <li>I can describe how filtering separates mixtures.</li> <li>I can identify when filtering should be used.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can identify and justify which type of enquiry to use to answer my testable question</li> </ul> <p><b>Lesson 4 – Solutions</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <p>To describe solutions and how they can be identified.</p> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To make observations about solutions.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> |  |
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- Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.

**Lesson 5 – Properties and changes of materials**

Pupils should be taught to:

- Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.

- I can define the terms **solution** and **dissolve**.
- I can name some common examples of solutions.

**Working scientifically**

- I can identify solutions by observing and describing their appearance.

**Lesson 5 – Dissolving**

**Learning objectives**

**Knowledge**

- To identify which factors affect the time taken to dissolve.

**Working scientifically**

- To plan a fair test with consideration of variables and measurements.

**Success criteria**

**Knowledge**

- I can recall some factors that affect the time taken to dissolve.
- I can describe the effect of temperature on the time taken to dissolve.

**Working scientifically**

- I can suggest which variables to change, measure and control.
- I can decide which measurements to take and how long to take them for.

**Lesson 6 – Evaporating**

**Learning objective**

**Knowledge**

- To describe the process of evaporation.

**Success criteria**

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|                    | <p>Lesson 6 –<b>Properties and changes of materials</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> </ul>                                                                                                                                                                                                                                     | <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define the term <b>evaporation</b>.</li> <li>I can describe how evaporation separates solutions.</li> <li>I can identify when evaporation should be used.</li> </ul> <p>Y1 Autumn 2 Everyday materials. Y2 Summer 1 Uses of everyday materials. Y3 Spring 1 Rocks and Soils. Y4 Spring 1 states of matter</p> <p>Key skill – literate and communicator. Describing evaporation.</p> <p><b>Literate</b></p> <p><b>Communicator</b></p>                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                     |
| Topic / Spring One | <p>Lesson 1 – <b>Properties and changes of materials</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</li> <li>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> </ul> | <p><b>Materials Properties and changes (6 lessons)</b></p> <p>Broadening their experience of the properties of materials, children investigate hardness, transparency and conductivity and consider how these properties influence the uses of materials. They explore reversible changes, including dissolving and changes of state. Children compare these to irreversible changes, including rusting, burning and mixing vinegar and bicarbonate of soda.</p> <p><b>Lesson 1 – Hardness Learning objectives Knowledge</b></p> <ul style="list-style-type: none"> <li>To determine the hardness of materials and link this to their uses.</li> </ul> <p><b>Working scientifically</b></p> | <p>burning<br/>change of state<br/>circumference<br/>condensing<br/>conductor<br/>dissolve<br/>electrical<br/>conductivity<br/>evaporating<br/>freezing<br/>hard<br/>hardness<br/>insulator<br/>irreversible change<br/>light intensity<br/>light meter<br/>melting<br/>mixture</p> |

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|  | <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</li> </ul> <p>Lesson 2 – <b>Properties and changes of materials</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</li> <li>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> | <ul style="list-style-type: none"> <li>To evaluate the hardness test to determine the degree of trust in the results.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define the term <b>hardness</b>.</li> <li>I can test, compare and group hard and soft materials.</li> <li>I can select materials for a specific purpose based on their hardness.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can identify difficult variables to control.</li> <li>I can judge how variables affect the degree of trust in results.</li> </ul> <p><b>Lesson 2 – Transparency</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To determine the transparency of different materials and link this to their uses.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To plan and draw a table of results.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define the term <b>transparency</b>.</li> <li>I can test, compare and group transparent, translucent and opaque materials.</li> <li>I can select materials for a purpose based on their transparency.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can identify which information should be recorded.</li> <li>I can draw the correct layout for the information I want to record.</li> </ul> <p><b>Lesson 3 – Conductivity</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> | <p>opaque<br/>property<br/>reversible change<br/>rust<br/>rusting<br/>soft<br/>states of matter<br/>trustworthy<br/>thermal conductivity<br/>translucent<br/>transparency<br/>transparent</p> |
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- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.

### Lesson 3 – Properties and changes of materials

Pupils should be taught to:

- Demonstrate that dissolving, mixing and changes of state are reversible changes.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording data and results of increasing complexity using tables.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

### Lesson 4 – Properties and changes of materials

- To determine the conductivity of different materials and link this to their uses.

#### Working scientifically

- To write a detailed, organised method that is easy to follow.

#### Success criteria

##### Knowledge

- I can define the terms **thermal conductivity** and **electrical conductivity**.
- I can test and compare the conductivity of different materials.
- I can choose an appropriate material for a specific purpose.

#### Working scientifically

- I can write a method in a logical sequence that others can follow.
- I can include necessary details in my method, including variables, measurements, equipment and safety.

### Lesson 4 – Reversible changes

#### Learning objectives

##### Knowledge

- To demonstrate reversible changes.

#### Working scientifically

- To write a prediction using prior knowledge of the states of matter.

#### Success criteria

##### Knowledge

- I can define the term **reversible change**.
- I can describe how to reverse mixing and dissolving using separation techniques.
- I can describe how to reverse changes of state by heating and cooling.

#### Working scientifically

- I can use previous scientific knowledge and evidence to inform predictions.

- Pupils should be taught to:
- Demonstrate that dissolving, mixing and changes of state are reversible changes.
  - Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Using test results to make predictions to set up further comparative and fair tests.

**Lesson 5 – Irreversible changes burning and rusting**

**Learning objectives**

**Knowledge**

- To demonstrate irreversible changes.

**Working scientifically**

- To analyse observations about rusting and use them to support a conclusion.

**Success criteria**

**Knowledge**

- I can define the term **irreversible change**.
- I can identify and describe burning and rusting as irreversible changes.

**Working scientifically**

- I can use observations to determine the necessary conditions for rusting.

**Lesson 6 – Irreversible changes Mixing**

**Learning objectives**

**Knowledge**

- To demonstrate irreversible changes.

**Working scientifically**

- To measure the circumference of a balloon accurately.

**Success criteria**

**Knowledge**

- I can identify and describe cooking and mixing vinegar and bicarbonate of soda as irreversible changes.

**Working scientifically**

- I can measure the circumference of a balloon accurately using a string and a ruler.

Y1 Autumn 2 Everyday materials. Y2 Summer 1 Uses of everyday materials. Y3 Spring 1 Rocks and Soils. Y4 Spring 1 states of matter. Y5 Mixtures and separation

Key Skill – Numerate

- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

Lesson 5 – **Science**  
**Properties and changes of materials**

Pupils should be taught to:

- Demonstrate that dissolving, mixing and changes of state are reversible changes.
- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using tables.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

**Lesson 6 –Properties and changes of materials**

Pupils should be taught to:

- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Identifying scientific evidence that has been

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|                    | used to support or refute ideas or arguments.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Topic / Spring Two | <p>Lesson 1 – <b>Living things and their habitats</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the life process of reproduction in some plants and animals.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</li> </ul> <p>Lesson 2 – <b>Living things and their habitats</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li>Describe the life process of reproduction in some plants and animals.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Identifying scientific evidence that has been</li> </ul> | <p><b>Living things and their habitats Life cycles and reproduction (6 lessons)</b><br/>Studying animal life cycles, children learn about the significance of reproduction for a species' survival. Pupils compare asexual and sexual reproduction in plants and grow cuttings to measure and plot root growth over time. Children compare the life cycles of mammals, birds, amphibians and insects identifying key differences. They analyse secondary data to investigate how the amphibian life cycle is affected by predators and climate change.</p> <p><b>Lesson 1 – Life cycles and reproduction in plants</b><br/><b>Learning objective</b><br/><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To describe the life cycle of a plant, including the reproductive stage.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>To observe and compare equivalent parts in different flowers.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>I can describe the plant life cycle.</li> <li>I can describe sexual reproduction in plants.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>I can dissect a flower.</li> <li>I can observe the parts of a flower in detail using a magnifying glass.</li> <li>I can compare equivalent parts in different flowers.</li> </ul> <p><b>Lesson 2 – Life cycle of a mammal</b><br/><b>Learning objective</b><br/><b>Knowledge:</b></p> | adolescence<br>adult<br>amphibian<br>asexual reproduction<br>bird<br>birth<br>bulb<br>carnivore<br>characteristic<br>chrysalis<br>cocoon<br>conclusion<br>cuttings<br>egg<br>estimating<br>extrapolating<br>fertilisation<br>fledgling<br>flowering stage<br>four-legged tadpole<br>four-stage life cycle<br>frog<br>froglet<br>germination stage<br>gestation<br>gills<br>hatch<br>hatchling<br>herbivore<br>incubation<br>infancy<br>insect<br>juvenile<br>larva<br>leaf growing stage |

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|  | <p>used to support or refute ideas or arguments.</p> <p><b>Lesson 3 – Living things and their habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li>Describe the life process of reproduction in some plants and animals.</li> </ul> <p><b>Lesson 4 – Living things and their habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li>Describe the life process of reproduction in some plants and animals.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such</li> </ul> | <ul style="list-style-type: none"> <li>To describe the life cycle of a mammal.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>To research the life cycles of different mammals.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>I can describe the life cycle of a mammal.</li> <li>I can compare the life cycles of different mammals.</li> <li>I can describe sexual reproduction in mammals.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>I can research using a fact sheet.</li> <li>I can identify relevant information.</li> </ul> <p><b>Lesson 3 – Life cycle of a bird</b></p> <p><b>Learning objective</b></p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To describe the life cycle of a bird and compare it with that of a mammal.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>To pose questions to compare the life cycles of different birds.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>I can describe the life cycle of a bird.</li> <li>I can compare the life cycles of different birds.</li> <li>I can compare the life cycles of mammals and birds.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>I can pose relevant questions about the life cycle of a bird.</li> <li>I can use technology to answer those questions.</li> <li>I can assess the value of a question.</li> </ul> | <p>life cycle<br/>line graph<br/>line of best fit<br/>lungs<br/>mammal<br/>mating<br/>metamorphosis<br/>nest<br/>nestling<br/>newborn<br/>nymph<br/>offspring<br/>ovule<br/>pollen<br/>pollination<br/>predict<br/>pupa<br/>reproduction<br/>seed dispersal<br/>seed stage<br/>seedling stage<br/>seed<br/>sexual reproduction<br/>species<br/>tadpole<br/>three-stage life cycle<br/>tuber<br/>two-legged tadpole</p> |
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as displays and other presentations.

#### Lesson 5 – Living things and their habitats

Pupils should be taught to:

- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- Describe the life process of reproduction in some plants and animals.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Using test results to make predictions to set up further comparative and fair tests.

#### Lesson 6 – Living things and their habitats

Pupils should be taught to:

- Describe the life process of reproduction in some plants and animals.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording data and results of increasing complexity using scientific diagrams and labels,

#### Lesson 4 – Life cycle of an amphibian

##### Learning objective

##### Knowledge:

- To describe the life cycle of an amphibian.

##### Working scientifically:

- To suggest how temperature may affect egg hatching.

##### Success criteria

##### Knowledge:

- I can describe the life cycle of an amphibian.
- I can compare the life cycles of different amphibians.

##### Working scientifically:

- I can analyse data.
- I can use data to draw conclusions.
- I can identify what further data is needed.

#### Lesson 5 – Life cycle of an insect

##### Learning objective

##### Knowledge:

- To describe the life cycle of an insect and compare it with that of an amphibian.

##### Working scientifically:

- To use data to describe a relationship and make predictions.

##### Success criteria

##### Knowledge:

- I can describe the three-stage life cycle of an insect.
- I can describe the four-stage life cycle of an insect.
- I can compare the life cycles of insects and amphibians.

##### Working scientifically:

- I can identify patterns in data.
- I can use data to make predictions.

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|                           | <p>classification keys, tables, scatter graphs, bar and line graphs.</p>                                                                                                                                                                                                                                                                                                                               | <p><b>Lesson 6 – Asexual plant reproduction</b><br/> <b>Learning objective</b><br/> <b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To describe asexual reproduction in plants.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>To represent root growth over time on a line graph.</li> </ul> <p><b>Success criteria</b><br/> <b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>I can describe the changes to a cutting as it grows.</li> <li>I can explain the difference between a clone and other offspring.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>I can plot data accurately on a line graph.</li> <li>I can estimate missing data from a line graph.</li> <li>I can extrapolate a line graph.</li> </ul> <p>Y2 Autumn 1 Habitats, Autumn 2 Microhabitats, Y4 Summer 1 classification and their habitats</p> <p>Key skill – describing the lifecycle of animals</p> <p><b>Communicator</b></p> |                                                                                                                                                                                      |
| <p>Topic / Summer One</p> | <p><b>Lesson 1 – Forces</b><br/> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> </ul> <p><b>Working scientifically</b><br/> Pupils should be taught to use the following practical scientific methods, processes and skills:</p> | <p><b>Forces, Earth and Space Unbalanced forces (6 lessons)</b><br/> Building on their knowledge of forces, children explore gravity, air resistance and water resistance in more depth and consider the effect of these forces being unbalanced. They demonstrate key principles in the classroom and plan investigations to further their understanding of the effects of these forces. Pupils test their ideas using models and compete to build the most effective pulley system.</p> <p><b>Lesson 1 – Gravity</b><br/> <b>Learning objective</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>aerodynamics<br/> air resistance<br/> amplify<br/> balanced<br/> contact force<br/> distance<br/> effort<br/> force<br/> friction<br/> gear<br/> gravity<br/> lever<br/> load</p> |

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|  | <ul style="list-style-type: none"> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</li> </ul> <p><b>Lesson 2 – Forces</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> </ul> <p><b>Lesson 3 – Forces</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> </ul> <p><b>Working scientifically</b></p> | <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe gravity and its effects.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To analyse data to write a conclusion.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define the term gravity.</li> <li>I can explain why unsupported objects fall towards the Earth.</li> <li>I can describe the relationship between mass and gravity.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can analyse data and identify anomalies.</li> <li>I can compare data to a prediction.</li> <li>I can describe the relationship between two variables.</li> </ul> <p><b>Lesson 2 – Air resistance</b><br/><b>Learning objective</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe air resistance and its effects.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To plan a fair test to investigate air resistance.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define the term air resistance.</li> <li>I can describe the relationship between surface area and air resistance.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can identify variables.</li> <li>I can write a method.</li> </ul> <p><b>Lesson 3 – Water resistance</b><br/><b>Learning objective</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe water resistance and its effects.</li> </ul> <p><b>Working scientifically</b></p> | <p>machine<br/>mass<br/>matter<br/>non-contact force<br/>pivot<br/>pulley<br/>streamlining<br/>surface area<br/>unbalanced<br/>water resistance</p> |
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Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

#### Lesson 4 – Forces

Pupils should be taught to:

- Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.

#### Lesson 5 – Forces

Pupils should be taught to:

- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables,

- To design a results table.

#### Success criteria

##### Knowledge

- I can define the term water resistance.
- I can describe the effects of water resistance.
- I can describe the relationship between surface area and water resistance.

##### Working scientifically

- I can measure time accurately.
- I can design a results table for repeat data.
- I can calculate an average.

#### Lesson 4 – Friction

##### Learning objective

##### Knowledge

- To describe friction and its effects.

##### Working scientifically

- To evaluate a method.

#### Success criteria

##### Knowledge

- I can define the term friction.
- I can describe the effects of forces.
- I can predict the outcomes of balanced and unbalanced forces.

##### Working scientifically

- I can evaluate the degree of trust.
- I can identify steps that need improving.
- I can suggest improvements.

#### Lesson 5 – Levers, pulleys and gears

##### Learning objective

##### Knowledge

- To describe the effects of levers, pulleys and simple machines on movement.

##### Working scientifically

- To draw and label a diagram.

#### Success criteria

##### Knowledge

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|                    | <p>scatter graphs, bar and line graphs.</p> <p><b>Lesson 6 – Imbalanced forces</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> </ul> | <ul style="list-style-type: none"> <li>I can explain the purpose of levers and pulleys.</li> <li>I can explain the purpose of gears.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can draw a diagram of a wind-powered pulley.</li> <li>I can label a diagram.</li> </ul> <p><b>Lesson 6 – Levers, pulleys and gears part 2</b><br/><b>Learning objective</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe the relationship between lever length and effort.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To draw an accurate line graph.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can name the three things needed for a lever.</li> <li>I can list the uses of levers.</li> <li>I can explain how changing the length of a lever will affect the effort needed to lift the load.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can label the axes on a line graph.</li> <li>I can plot data on a line graph.</li> <li>I can draw a line of best fit.</li> </ul> <p>Y1 Autumn 1 Seasonal changes. Y5 Spring 1 Earth and Space</p> |                                                                                              |
| Topic / Summer Two | <p><b>Lesson 1 – Animals including humans</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the changes as humans develop to old age.</li> </ul> <p><b>Working scientifically</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p><b>Animals including humans Human timeline (3 lessons)</b><br/>Studying human development and changes, children identify key stages and consider what data may help determine if a child is growing normally. They describe how puberty affects girls and boys and produce graphs to compare how gestation periods vary across different mammals, including humans.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>adolescence<br/>adolescent<br/>adult<br/>adulthood<br/>child<br/>childhood<br/>foetus</p> |

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|  | <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</li> </ul> <p><b>Lesson 2 – Animals including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the changes as humans develop to old age.</li> </ul> <p><b>Lesson 3 – Animals including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the changes as humans develop to old age.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> </ul> | <p><b>Lesson 1 – Growing old</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To describe how humans change from babies through to old age.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To use a line graph to identify patterns in height and predict values.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can order the stages in growth and development from birth to old age.</li> <li>I can describe physical changes from a baby through to old age.</li> <li>I can describe developmental changes from a baby through to old age.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can describe growth from baby to adult.</li> <li>I can identify where on the graph the rate of growth changes.</li> <li>I can use a line graph to make predictions about height.</li> </ul> <p><b>Lesson 2 – Puberty</b></p> <p><b>Learning objective</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify changes in males and females as a result of puberty.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can describe the physical changes that occur in females and males during puberty.</li> <li>I can describe the emotional changes that occur during puberty.</li> <li>I can suggest ways to help manage the changes during puberty.</li> </ul> | <p>gestation period<br/>hormones<br/>infant<br/>life cycle<br/>newborn<br/>old age<br/>period (menstruation)<br/>puberty<br/>toddler</p> |
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|                    | <ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> <li>Using test results to make predictions to set up further comparative and fair tests.</li> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</li> </ul> | <p><b>Lesson 3 – Comparing human gestation</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To explore the gestation periods of humans and other animals.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To plot data on a scatter graph.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can recall what a gestation period is.</li> <li>I can describe how gestation varies across different animals.</li> <li>I can compare the gestation of other animals with humans.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can choose a suitable title for a graph.</li> <li>I can choose appropriate labels and units for axes on a graph.</li> <li>I can plot data on a scatter graph.</li> </ul> <p>Y1 Spring 1 sensitive bodies, Spring 2 Comparing animals. Y2 Spring 2 Life cycles and health. Y3 Autumn 1 Movement and nutrition. Y4 Spring 1 digestion and food.</p> <p>Key skill – curious<br/>Using data to make predictions</p> <p><b>Curious</b></p> <p>Sir David Attenborough</p> | Animals                      |
| Year 6             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |
| Topic / Autumn One | Lesson 1 – <b>Living things and their habitats</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Living things and their habitats Classifying big and small (6 lessons)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | amphibian<br>binomial system |

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|  | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</li> <li>Give reasons for classifying plants and animals based on specific characteristics.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul> <p><b>Lesson 2 – Living things and their habitats</b><br/>Pupils should be taught to</p> <ul style="list-style-type: none"> <li>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</li> </ul> | <p>Children broaden their knowledge of how vertebrates, invertebrates, plants and micro-organisms are grouped using shared characteristics. They discover how Carl Linnaeus developed the Linnaean and binomial systems for classifying and naming living things. Pupils use and produce classification keys to sort and identify organisms.</p> <p><b>Lesson 1 – Carl Linnaeus and classification</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>To explain how organisms are classified using the Linnaean system.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can define the term 'organism'.</li> <li>I can describe the work of Carl Linnaeus.</li> <li>I can organise a diagram to show the Linnaean system.</li> </ul> <p><b>Lesson 2 – Cold blooded vertebrates</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>To classify the cold-blooded vertebrate groups using their common characteristics.</li> </ul> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can define the term 'vertebrate'.</li> <li>I can name the vertebrate groups.</li> <li>I can describe the characteristics of fish, amphibians and reptiles.</li> <li>I can use a branching key to identify the cold-blooded vertebrates.</li> </ul> <p><b>Lesson 3 – Warm blooded vertebrates</b><br/><b>Learning objective</b></p> <ul style="list-style-type: none"> <li>To classify the warm-blooded vertebrate groups using their common characteristics.</li> </ul> <p><b>Success criteria</b></p> | <p>bird<br/>characteristic<br/>classify<br/>classification key<br/>cold-blooded<br/>conifer<br/>exoskeleton<br/>fern<br/>fish<br/>flowering plant<br/>insect<br/>invertebrate<br/>life process<br/>Linnaean system<br/>mammal<br/>micro-organism<br/>microscopic<br/>moss<br/>organism<br/>reptile<br/>snail<br/>spider<br/>vertebrate<br/>warm-blooded<br/>worm</p> |
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- Give reasons for classifying plants and animals based on specific characteristics.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys.

**Lesson 3 – Living things and their habitats**

Pupils should be taught to

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.
- Give reasons for classifying plants and animals based on specific characteristics.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- I can describe the characteristics of birds and mammals.
- I can compare the characteristics of vertebrate groups.

- I can use a classification key to identify and classify vertebrates.

**Lesson 4 – Invertebrates**

**Learning objective**

- To classify invertebrates.

**Success criteria**

- I can define the term 'invertebrate'.
- I can describe the characteristics of worms, snails, spiders and insects.
- I can compare the characteristics of the invertebrate groups.

- I can use a classification key to identify and classify invertebrates.

**Lesson 5 – Plants**

**Learning objectives**

- To describe how the plant kingdom is organised (based on shared characteristics).

**Working scientifically:** To produce a working classification key.

**Success criteria**

- I can name the plant groups and describe their characteristics.

**Working scientifically:**

- I can organise the layout of a classification key.
- Working scientifically: I can design appropriate questions for classification keys.

**Lesson 6 – Micro-organisms**

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys.

**Lesson 4 – Living things and their habitats**

Pupils should be taught to

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.
- Give reasons for classifying plants and animals based on specific characteristics.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys.

**Lesson 5 – Living things and their habitats**

Pupils should be taught to

**Learning objective**

- To describe and classify micro-organisms.

**Success criteria**

- I can define the term 'micro-organism'.
- I can name some micro-organisms.
- I can classify micro-organisms using a classification key.

Y2 Autumn 1 Habitats, Autumn 2 Microhabitats, Y4 Summer 1 classification and their habitats. Y5 Spring 2 life cycles and reproduction

Key skill – literate. Describing living things and classifying them using technical vocabulary.

**Literate**

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.
- Give reasons for classifying plants and animals based on specific characteristics.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys.

**Lesson 6 – Living things and their habitats**

Pupils should be taught to:

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

**Working scientifically**

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                  |
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|                           | <p>Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                  |
| <p>Topic / Autumn Two</p> | <p><b>Lesson 1 – Light</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that light appears to travel in straight lines.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</li> <li>Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul> <p><b>Lesson 2 – Light</b><br/>Pupils should be taught to:</p> | <p><b>Energy Light and reflection (6 lessons)</b><br/>Proving that light travels in a straight line, children use this information to explain observations of reflection and shadows. They explore how our eyes allow us to see and how mirrors can be used in a variety of ways. Pupils investigate factors affecting the size of shadows and the laws of reflection. Children apply what they have learned about light by exploring real-life uses of mirrors.</p> <p><b>Lesson 1 – The pathway of light</b><br/><b>Learning objectives</b></p> <ul style="list-style-type: none"> <li>To describe the pathway of light.</li> </ul> <p><b>Working scientifically:</b> To use evidence to form conclusions.</p> <p><b>Success criteria</b></p> <ul style="list-style-type: none"> <li>I can compare sources of light.</li> <li>I can describe how light travels.</li> </ul> <p><b>Working scientifically:</b></p> <ul style="list-style-type: none"> <li>I can make observations about the properties of light.</li> <li>I can use my observations as evidence to support conclusions about light.</li> </ul> <p><b>Lesson 2 – See the light</b></p> | <p>cast<br/>incoming ray<br/>light ray<br/>light source<br/>luminous<br/>mirror<br/>non-luminous<br/>opaque<br/>periscope<br/>pupil<br/>ray diagram<br/>reflected ray<br/>reflective<br/>shadow<br/>straight</p> |

- Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.
- Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

**Lesson 3 – Light**

Pupils should be taught to:

- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

**Working scientifically**

**Learning objectives**

- To describe how we see.
- Working scientifically: To draw scientific diagrams.

**Success criteria**

- I can describe how we see luminous objects.
- I can describe how we see non-luminous objects.
- I can explain how the eye is protected from light.

**Working scientifically:** I can draw ray diagrams.

**Lesson 3 – Measuring shadows**

**Learning objectives**

- To explain how shadows change.

**Working scientifically:** To pose questions

**Success criteria**

- I can recall factors that affect the size of a shadow.
- I can describe how the distance between an object and the surface its shadow is cast on affects the size of the shadow.
- I can use ray diagrams to explain why shadows change size.
- I can use ray diagrams to explain why the shape of a shadow matches the object that cast it.

**Working scientifically:** I can pose testable questions in response to observations.

**Lesson 4 – Reflecting light**

**Learning objectives**

- To investigate what affects the angle of the reflected ray.

**Working scientifically:** To record results as a line graph.

**Success criteria**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

#### Lesson 4 – Light

Pupils should be taught to:

- I can recall what happens to light when it reaches a smooth mirror surface.
- I can identify the incoming and reflected rays.
- I can describe the relationship between the angles of the incoming and reflected rays.

#### Working scientifically:

- I can record my measurements as a line graph.
- I can use my line graph to extrapolate data and make predictions about missing values.

#### Lesson 5 – Making a periscope

##### Learning objective

- To explain how a periscope works.

##### Success criteria

- I can use mirrors to make a working periscope.
- I can describe the journey light makes through a periscope.
- I can use ray diagrams to explain how a periscope works.

#### Lesson 6 – Using mirrors

##### Learning objectives

- To explain how mirrors are helpful.

**Science in action:** To explore different jobs or inventions that depend on reflection.

##### Success criteria

- To recall a range of uses of mirrors and reflection.
- To describe how a mirror is used to reflect light in different situations.
- To explain how light is reflected using knowledge of light and reflection.

**Science in action:** To recall various jobs or inventions that use mirrors and reflection.

- Recognise that light appears to travel in straight lines.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

**Lesson 5 – Light**

Pupils should be taught to:

Y3 Spring 2 Light and shadows

Key skill – valuing inventions and jobs that use reflection.

Valuing

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|                    | <ul style="list-style-type: none"> <li>• Recognise that light appears to travel in straight lines.</li> <li>• Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</li> <li>• Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</li> </ul> <p>Lesson 6 – <b>Light</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Recognise that light appears to travel in straight lines.</li> <li>• Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</li> <li>• Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</li> </ul> |                                                                                                                                                                                                |                                                                   |
| Topic / Spring One | <p>Lesson 1 – <b>Evolution and inheritance</b><br/>Pupils should be taught to:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p><b>Living things and their habitat Evolution and inheritance (6 lessons)</b><br/>Studying patterns in humans and other species, children learn about characteristics that are inherited</p> | <p>adaptation<br/>ancestor<br/>characteristic<br/>competition</p> |

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|  | <ul style="list-style-type: none"> <li>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</li> </ul> <p><b>Lesson 2 – Evolution and inheritance</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</li> </ul> <p><b>Lesson 3 – Evolution and inheritance</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul> <p><b>Lesson 4 – Evolution and inheritance</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify how animals and plants are adapted to suit their environment in different ways and that</li> </ul> | <p>from parents and those that are environmental. Through the eyes of Darwin and Wallace, pupils understand how observations lead to theories and explore natural selection. By modelling the variation and natural selection of Darwin's finches, they begin to explain how species evolve over time and the role of fossil evidence that supports this theory.</p> <p><b>Lesson 1 – Variation</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To explain why there are differences within a species.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To group factors.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can define variation.</li> <li>I can identify examples of variation.</li> <li>I can recall the causes of variation.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can group the causes of variation.</li> </ul> <p><b>Lesson 2 – Inheritance</b><br/><b>Learning objective</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To recognise the inheritance of characteristics in plants and animals.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can compare characteristics between individuals from the same species.</li> <li>I can identify variation that is inherited.</li> <li>I can recall that living things produce offspring of the same kind.</li> <li>I can describe patterns of inheritance.</li> </ul> | <p>environmental<br/>evidence<br/>evolution<br/>extinct<br/>fossil<br/>gene<br/>habitat<br/>inherit<br/>natural selection<br/>offspring<br/>peer review<br/>population<br/>reproduce<br/>scientific theory<br/>selective breeding<br/>species<br/>specimen<br/>survival<br/>survival of the fittest<br/>variation</p> |
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adaptation may lead to evolution.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Using test results to make predictions to set up further comparative and fair tests.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

**Lesson 5 – Evolution and inheritance**

Pupils should be taught to:

- Recognise that living things have changed over time and that fossils

**Lesson 3 – Adaptations**

**Learning objective**

**Knowledge**

- To explain why adaptation is necessary.

**Success criteria**

**Knowledge**

- I can recall what an adaptation is.
- I can recognise that adaptations cannot be chosen.
- I can describe key characteristics that would help an organism survive.
- I can explain how an adaptation helps the organism to survive.

**Lesson 4 – Modelling and natural selection**

**Learning objectives**

**Knowledge**

- To model how natural selection affects population size.

**Working scientifically**

- To evaluate the degree of trust and pose new questions for further enquiry.

**Success criteria**

**Knowledge**

- I can describe variation in a given population.
- I can explain how variation may affect survival within that population.
- I can recall what is meant by natural selection.

**Working scientifically**

- I can recall variables that were effectively kept the same and those harder to control.
- I can comment on the reliability of the results.
- I can comment on the degree of trust.

**Lesson 5 – Evolution**

provide information about living things that inhabited the Earth millions of years ago.

- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Identifying scientific evidence that has been used to support or refute ideas or arguments.

#### **Lesson 6 – Evolution and inheritance**

Pupils should be taught to:

- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.

#### **Working scientifically**

#### **Learning objectives**

##### **Knowledge**

- To describe the theory of evolution.

##### **Working scientifically**

- To consider evidence used to inform theories.

##### **Success criteria**

##### **Knowledge**

- I can recall what evolution is.
- I can identify differences between a living thing and its ancestor.
- I can describe key steps in the evolution of a species.

##### **Working scientifically**

- I can describe some of the evidence used for evolution.

#### **Lesson 6 – Evidence for evolution**

##### **Learning objectives**

##### **Knowledge**

- To recognise evidence that can be used for evolution.

##### **Working scientifically**

- To consider the degree of trust in the evidence used.

##### **Success criteria**

##### **Knowledge**

- I can recall different evidence that can be used.
- I can describe methods used to make results or conclusions more trustworthy.

##### **Working scientifically**

- I can consider the advantages and disadvantages of evidence used to explain evolution.
- I can evaluate the advantages and disadvantages of the evidence used and consider a degree of trust.

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|                    | <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| Topic / Spring Two | <p><b>Lesson 1 – Electricity</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Use recognised symbols when representing a simple circuit in a diagram.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> </ul> <p><b>Lesson 2 – Electricity</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Use recognised symbols when representing a simple circuit in a diagram.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific</li> </ul> | <p><b>Energy Circuits, batteries and switches (6 lessons)</b><br/>Using their prior knowledge of electrical circuits, children learn to draw conventional circuit diagrams and use models to explain current, resistance and voltage. They compare different batteries and consider the effect on bulb brightness. Pupils apply their knowledge of switches and electrical circuits to design and produce their own practical devices.</p> <p><b>Lesson 1 – Components and circuits</b><br/><b>Learning objective</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To use recognised symbols for electrical components.</li> </ul> <p><b>Success criteria</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can use standard circuit symbols for electrical components.</li> <li>I can describe the function of key electrical components.</li> <li>I can explain how a model represents electrical components.</li> </ul> <p><b>Lesson 2 – Circuit diagrams</b><br/><b>Learning objectives</b><br/><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To predict and present results for electrical circuits.</li> </ul> <p><b>Working scientifically</b></p> | <p>ammeter<br/>appliance<br/>battery<br/>bulb<br/>buzzer<br/>cell<br/>circuit<br/>circuit diagram<br/>component<br/>current<br/>electricity<br/>motor<br/>power source<br/>resistance<br/>switch<br/>voltage<br/>voltmeter<br/>wire</p> |

diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

### Lesson 3 – Electricity

Pupils should be taught to:

- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and

- To use standardised symbols when drawing diagrams.

#### Success criteria

##### Knowledge

- I can predict if an electrical circuit will work or not.
- I can explain why an electrical circuit will or will not work.

##### Working scientifically

- I can use standard circuit symbols when drawing diagrams.
- I can draw circuit diagrams that have straight lines.

### Lesson 3 – Current and resistance

#### Learning objectives

##### Knowledge

- To recognise a link between the number of components and resistance.

##### Working scientifically

- To explain results using scientific knowledge.

#### Success criteria

##### Knowledge

- I can describe the relationship between the number of bulbs in a circuit and the bulb brightness.
- I can describe the link between the number of components and the amount of resistance in a circuit.
- I can explain why the number of bulbs in a circuit affects their brightness.

##### Working scientifically

- I can use scientific vocabulary when writing a conclusion.
- I can use scientific knowledge to explain an observation.

explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

#### Lesson 4 – Electricity

Pupils should be taught to:

- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Using test results to make predictions to set up further comparative and fair tests.

#### Lesson 4 – Batteries and voltage

##### Learning objectives

##### Knowledge

- To identify ways to change voltage within an electrical circuit.

##### Working scientifically

- To design a results table.

##### Success criteria

##### Knowledge

- I can identify that batteries are a voltage source.
- I can recall that batteries have different voltages.
- I can describe how voltage affects bulb brightness.

##### Working scientifically

- I can choose an appropriate number of columns when designing a results table.
- I can choose appropriate headings for the columns of a results table.
- I can put any units in the heading of a results table.

#### Lesson 5 – Voltage and bulb brightness

##### Learning objectives

##### Knowledge

- To investigate how voltage affects bulb brightness.

##### Working scientifically

- To plan an enquiry.

##### Success criteria

##### Knowledge

- I can describe how changing the number of cells affects the voltage.
- I can describe the relationship between voltage and bulb brightness.

### Lesson 5 – Electricity

Pupils should be taught to:

- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.
- Use recognised symbols when representing a simple circuit in a diagram.

#### Working scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing

- I can use this relationship to make predictions about other components.

#### Working scientifically

- I can identify the changed and measured variables.
- I can suggest control variables to ensure a fair test.
- I can plan ways to control variables to make it a fair test.

### Lesson 6 – Practical circuits

#### Learning objectives

##### Knowledge

- To apply knowledge of circuits and components to a practical solution.

##### Science in action

- To recognise that scientific knowledge can solve a problem.

#### Key skill – resilience

##### Resilience

#### Success criteria

##### Knowledge

- I can build an electrical circuit with a switch to control its function.
- I can draw a circuit diagram to show the circuit used.
- I can explain how the switch and the electrical circuit work to solve the problem.
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#### Key skill – resilience

##### Resilience

#### Science in action

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|                    | <p>complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <ul style="list-style-type: none"> <li>Using test results to make predictions to set up further comparative and fair tests.</li> </ul> <p><b>Lesson 6 – Electricity</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</li> <li>Use recognised symbols when representing a simple circuit in a diagram.</li> </ul> | <ul style="list-style-type: none"> <li>I can recall different problems solved by a switch in an electrical circuit.</li> <li>I can explain how switches can be used to keep people safe.</li> </ul> <p><b>Y4 Autumn 2 Electricity and circuits</b></p>                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                         |
| Topic / Summer One | <p><b>Lesson 1 – Animals including humans</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> </ul> <p><b>Working scientifically</b><br/>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>Reporting and presenting findings from enquiries, including conclusions,</li> </ul>                                                                                                                                       | <p><b>Animals including humans - Circulation and health (6 lessons)</b> Studying the human circulatory system, children learn about the role of the heart, blood and blood vessels and use models to demonstrate their function. They explore how lifestyle choices affect our health and use secondary sources to advise patients. Pupils devise their own investigation to look at the relationship between exercise and heart rate, applying their knowledge of variables and then analysing secondary data to understand fitness better.</p> <p><b>Lesson 1 – Factors affecting health</b></p> | <p>balanced diet<br/>blood<br/>bloodstream<br/>blood vessels<br/>carbon dioxide<br/>circulatory system<br/>diet<br/>drug<br/>exercise<br/>fitness<br/>health<br/>heart<br/>heart rate<br/>lifestyle</p> |

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|  | <p>causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</p> <ul style="list-style-type: none"> <li>Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul> <p><b>Lesson 2 – Animals including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> <li>Describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul> <p><b>Lesson 3 – Animals including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> </ul> | <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To identify factors that affect our health and how to reduce their negative impact.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>To evaluate sources of information.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can recall factors that improve someone's health.</li> <li>I can recall factors that have a negative effect on someone's health.</li> <li>I can suggest improvements to someone's health.</li> </ul> <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>I can consider the degree of trust in a secondary source.</li> <li>I can explain whether a secondary source may be trustworthy or not.</li> </ul> <p><b>Lesson 2 – The heart and circulatory system</b></p> <p><b>Learning objectives</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>To summarise the key structures and purpose of the circulatory system.</li> </ul> <p><b>Success criteria</b></p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>I can describe the circulatory system as a group of organs that transports blood around the body.</li> <li>I can recall that the heart is a muscular pump that pushes the blood.</li> <li>I can describe the pathway of blood around the human circulatory system.</li> </ul> <p><b>Lesson 3 - Blood</b></p> <p><b>Learning objectives</b></p> | <p>lungs<br/>mass<br/>nutrient<br/>oxygen<br/>pulse<br/>pump (verb)<br/>rate<br/>resting heart rate<br/>transport<br/>water</p> |
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- Describe the ways in which nutrients and water are transported within animals, including humans.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

**Lesson 4 – Animals including humans**

Pupils should be taught to:

- Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.

**Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables,

**Knowledge**

- To identify the key roles of blood.

**Working scientifically**

- To evaluate a model.

**Success criteria**

**Knowledge**

- I can describe some of the functions of blood.
- I can list some of the substances transported by blood.
- I can describe links between the digestive and circulatory systems.

**Working scientifically**

- I can identify similarities between the model used and real blood.
- I can identify the limitations of the model representing blood.
- I can suggest improvements and alternatives with justification.

**Lesson 4 – Heart rate**

**Learning objectives**

**Knowledge**

- To explore the relationship between animal size and heart rate.

**Working scientifically**

- To interpret patterns in data.

**Success criteria**

**Knowledge**

- I can recall what is meant by heart rate and the unit used to measure it.
- I can research using multiple sources to find reliable animal mass values.
- I can identify the pattern between mass and heart rate.

**Working scientifically**

- I can independently say how the mass of an animal affects its heart rate.

- scatter graphs, bar and line graphs.
- Using test results to make predictions to set up further comparative and fair tests.
  - Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

#### Lesson 5 – **Animals including humans**

Pupils should be taught to:

- Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
- Describe the ways in which nutrients and water are transported within animals, including humans.

#### **Working scientifically**

Pupils should be taught to use the following practical scientific methods, processes and skills:

- I can quote values as evidence of the patterns observed.
- I can compare class values and recognise when they do not match.
- I can use the pattern to predict new values.

#### Key skill – Communicator

Communicator

#### **Lesson 5 – Investigating exercise and heart rate**

##### **Learning objectives**

##### **Knowledge**

- To investigate the relationship between exercise and heart rate.

##### **Working scientifically**

- To write a method.

##### **Success criteria**

##### **Knowledge**

- I can describe how exercise affects heart rate.
- I can describe how different types of exercise affect heart rate.
- I can explain why the heart rate changes during exercise.

##### **Working scientifically**

- I can identify the changed, measured and controlled variables.
- I can list the equipment required.
- I can suggest how many different changed variables to use and how to complete the measured variable.

#### **Lesson 6 – Heart rate and fitness**

##### **Learning objectives**

##### **Knowledge**

- To describe the relationship between heart rate and fitness.

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

**Lesson 6 – Animals including humans**

Pupils should be taught to:

- Identify and name the main parts of the human circulatory system, and describe the functions of

**Working scientifically**

- To draw a line graph.

**Success criteria**

**Knowledge**

- I can describe what happens to heart rate during and after exercise.
- I can compare more than one set of heart rate data.
- I can identify a link between heart rate and fitness.

**Working scientifically**

- I can choose a suitable title for the line graph.
- I can choose suitable axes labels with units.
- I can plot points on a line graph.

Y1 Spring 1 sensitive bodies, Spring 2 Comparing animals. Y2 Spring 2 Life cycles and health. Y3 Autumn 1 Movement and nutrition. Y4 Spring 1 digestion and food. Y5 Human timeline.

Y6 Guided reading A1 – Pig Heart Boy

Key skill – Communicator



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|                    | <p>the heart, blood vessels and blood.</p> <ul style="list-style-type: none"> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>• Describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul> <p><b>Working scientifically</b></p> <p>Pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> <li>• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</li> </ul> |                   |              |
| Topic / Summer Two | Science and inventors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Benjamin Franklin | Electricity. |