**Scientific Knowledge and Conceptual Understanding Progression Chart**

**Curriculum Aims**

# The national curriculum for science aims to ensure that all pupils:

* develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
* develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
* are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

**EYFS**

# Understanding the World: The Natural World

* + Explore the natural world around them, making observations and drawing pictures of animals and plants
  + Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class
  + Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

# Personal, Social and Emotional Development – managing self

* + Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices

**Y1**

|  |  |  |  |
| --- | --- | --- | --- |
| **Animals including humans** | **Plants** | **Living things and their habitats** | **Evolution** |
| I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.  I can compare a variety of common animals including fish, amphibians, reptiles, birds and mammals.  I can identify and name a variety of common animals that are carnivores, omnivores and herbivores.  I can identify, name, draw and label the basic parts of the human body.  I can identify which part of the body is associated with each sense.  I can compare humans. | I can identify different plants.  I can identify and describe the basic structure of plants.  I understand that plants can grow. I can name a variety of common wild plants.  I can sort a variety of plants.  I can name a variety of common plants that we can eat.  I can identify, name and describe the basic structure of deciduous and evergreen trees. |  |  |

**Y2**

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| --- | --- | --- | --- |
| **Animals including humans** | **Plants** | **Living things and their habitats** | **Evolution** |
| I can find out about and describe the basic needs of animals, including humans, for survival.  I notice that animals, including humans have offspring which grow into adults.  I can describe the importance for humans to exercise.  I can describe the importance for humans to eat the right amounts of different types of food.  I can describe the importance for humans to have good hygiene.  I can describe the importance for humans to look after themselves. | I can identify that fruit, vegetables and herbs are types of plant that we eat.  I can observe and describe how seeds grow into mature plants.  I know what plants need to grow and stay healthy.  I can explain the life cycle of plants. | I can explore and compare the differences between things that are living, dead, and things that have never been alive.  I can identify and name a variety of plants and animals in their habitats, including microhabitats.  I can identify and name a variety of plants and animals in their habitats.  I can identify that most living things live in a habitat to which they are suited.  I can construct a simple food chain. |  |

**Y3**

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| --- | --- | --- | --- |
| **Animals including humans** | **Plants** | **Living things and their habitats** | **Evolution** |
| I can identify that humans have bones for support, protection and movement.  I can identify that some other animals have bones for support, protection and movement.  I understand that animals, including humans, need the right type of nutrition. | I can explore the requirements of plants for life and growth.  I can identify, locate and describe the function of different parts of flowering plants.  I can identify, locate and describe the function of the roots in plants.  I can investigate the way in which water is transported within plants.  I can explore the part that flowers play in the life cycle of flowering plants, including pollination.  I can explore the part that flowers play in the life cycle of flowering plants, including seed formation and seed dispersal. |  |  |

**Y4**

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| --- | --- | --- | --- |
| **Animals including humans** | **Plants** | **Living things and their habitats** | **Evolution** |
| I can name the basic parts of the digestive system and describe their functions.  I can identify the different teeth and describe their functions.  I can construct and interpret a variety of food chains.  I understand what producers, predators and prey are. |  | I can recognise that living things can be grouped in a variety of ways.  I can explore and use classification keys to help group, identify and name a variety of living things in my local environment.  I can recognise that environments can change and that this can sometimes pose dangers to living things. |  |

**Y5**

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| --- | --- | --- | --- |
| **Animals including humans** | **Plants** | **Living things and their habitats** | **Evolution** |
| I can describe the human life cycle.  I understand how a foetus develops in the womb.  I can describe what happens when I am a teenager.  I can describe what happens when I am a senior. |  | I can discuss the seven life processes. I can explain how mammals reproduce. I can explain how animals reproduce.  I understand reproduction in plants.  I can describe the differences in the life cycles of mammals, amphibians, reptiles, insects and birds.  I can explain the life cycle of plants. |  |

**Y6**

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| --- | --- | --- | --- |
| **Animals including humans** | **Plants** | **Living things and their habitats** | **Evolution** |
| I can identify and name the main parts of the human circulatory system.  I can identify and name the main parts of the heart.  I can describe how water and nutrients are transported in humans.  I can identify how humans can live a healthy lifestyle. |  | I can describe how living things can be classified into broad groups.  I understand how I can use classification keys to help group, identify and name a variety of living things.  I can describe how living things can be classified into broad groups.  I understand that microorganisms are also living things.  I can describe how living things can be classified into broad groups.  I know that scientists have developed different ways to classify living things. | I can identify how plants are adapted to their environment.  I can identify how animals are adapted to their environment.  I can explain natural selection and how it may lead to evolution.  I can explain how adaptations may lead to evolution.  I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.  I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. |

**Y1**

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| --- | --- | --- |
| **Materials** | **Rocks** | **States of matter** |
| I can identify a variety of everyday materials.  I can describe the physical properties of a variety of everyday materials.  I can distinguish between an object and the material from which it is made.  I can compare and group together a variety of everyday materials on the basis of their simple physical properties. |  |  |

**Y2**

|  |  |  |
| --- | --- | --- |
| **Materials** | **Rocks** | **States of matter** |
| I can identify a variety of everyday materials.  I can distinguish between an object and the material it is made from.  I can investigate the properties of different materials. |  |  |

**Y3**

|  |  |  |
| --- | --- | --- |
| **Materials** | **Rocks** | **States of matter** |
|  | I can compare and group together different kinds of rocks on the basis of their appearance.  I can compare and group together different kinds of rocks on the basis of their physical properties.  I can explain how some rocks are formed.  I can explain how the Earth is made up of different layers of rocks and soils  I can describe how fossils are formed when things that have lived are trapped within rock. |  |

**Y4**

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| --- | --- | --- |
| **Materials** | **Rocks** | **States of matter** |
|  |  | I can identify solids, liquids and gases.  I can take accurate measurements usingthermometers.  I can observe that some materials change state whenthey are heated or cooled.  I can identify the part played by evaporation andcondensation in the water cycle.  I can associate the rate of evaporation withtemperature. |

**Y5**

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| --- | --- | --- |
| **Materials** | **Rocks** | **States of matter** |
| I can compare and group materials according to whether they are solids, liquids or gases and name their properties.  I can describe the properties of materials using scientific vocabulary.  I can investigate the thermal insulation of different materials.  I can compare and group materials based on their response to magnets.  I know that some materials dissolve in a liquid to make a solution.  I can predict how I could separate mixtures.  I can explain why some changes are irreversible. |  |  |

**Y1**

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| --- | --- | --- | --- | --- | --- |
| **Forces and magnets** | **Seasonal change** | **Earth and space** | **Electricity** | **Sound** | **Light** |
|  | I can observe and describe changes across the four seasons.  I can observe how day length varies.  I can describe weather associated with the seasons. |  |  |  |  |

**Y3**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Forces and magnets** | **Seasonal change** | **Earth and space** | **Electricity** | **Sound** | **Light** |
| I can compare how different things move.  I can compare how objects move on different surfaces  I can explore how magnetic forces act at a distance.  I can compare and group various everyday materials based on whether they are attracted to a magnet.  I can predict whether two magnets will attract or repel each other, depending on which poles are facing.  I can record my findings using simple scientific vocabulary. |  |  |  |  | I can recognise that there needs to be light in order to see things and that darkness is the absence of light  I can notice that light is reflected from surfaces.  I can recognise that light from the Sun can be dangerous and that there are ways to protect your eyes and skin from the Sun.  I can recognise that shadows are formed when light from a light source is blocked by an opaque object.  I know that shadows take on the shape of the opaque object.  I can predict where a shadow will form in relation to an opaque object and a light source.  I can find patterns in the way that the length of shadows change. |

**Y4**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Forces and magnets** | **Seasonal change** | **Earth and space** | **Electricity** | **Sound** | **Light** |
|  |  |  | I can identify common appliances that use electricity. I can construct a simple circuit and name the parts of the circuit.  I can identify if a bulb will light up in a circuit.  I can recognise common conductors and insulators.  I can investigate switches. | I can identify how sounds are made, associating some of them with something vibrating.  I can recognise that vibrations from sounds travel through a medium to the ear.  I can find patterns between the pitch of a sound and features of the object that produced it.  I can find patterns between the volume of a sound and the strength of the vibrations that |  |

**Y5**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Forces and magnets** | **Seasonal change** | **Earth and space** | **Electricity** | **Sound** | **Light** |
| I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and falling objects.  I can identify the effect of friction between moving surfaces.  I can identify the effect of air resistance.  I can identify the effect of water resistance.  I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. |  | I can describe the planets in the solar system.  I can describe the Sun, Earth and Moon as approximately spherical bodies.  I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system.  I can describe the movement of the Moon relative to the Earth.  I can use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky.  I can describe the movement of the Moon relative to the Earth. |  |  |  |

**Y6**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Forces and magnets** | **Seasonal change** | **Earth and space** | **Electricity** | **Sound** | **Light** |
|  |  |  | I can use symbols when drawing a simple circuit diagram.  I can associate the brightness of a lamp with the number and voltage of cells used in the circuit.  I can investigate variations in how components function.  I can name renewable and non-renewable sources of energy. |  | I can recognise that light appears to travel in straight lines.  I can 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.  I can explain how the eye works.  I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.  I can explain how shadows change during the day. |