Essendon C of E Primary School

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Science Curriculum

Progression of Skills and Knowledge, using Kapow.

Mixed-Age updated: Dec 2025

Review date: Dec 2026

How is the Science scheme of work organised?

Progression of Skills & knowledge

Scientific knowledge and understanding

Year 5/6
Knowledge • To know that some substances will dissolve in a liquid to form a solution. • To know the factors that affect the rate of dissolving, including temperature and stirring. • To know that some liquids and solids can be separated using sieving, filtering and evaporation and to describe these processes. • To describe a broader range of materials and their properties, including hardness, solubility, transparency, conductivity and response to magnets. • To understand that dissolving, mixing and changes of state are reversible changes. • To understand that some changes result in the formation of new materials and that these are usually irreversible. (e.g. burning, rusting, the action of acid on bicarbonate of soda.) • To know that the Sun is a star at the centre of our solar system. • To know that the Sun, Earth and Moon are approximately spherical bodies. • To know the names, order and relative positions of the planets and other main celestial bodies. • To know that a moon is a celestial body that orbits a planet and give examples of moons that orbit other planets. • To know that the Earth and other planets orbit around the Sun. • To know that the tilt of the Earth and its orbit around the Sun causes the seasons. • To know that the Moon orbits around the Earth. • To understand how the Earth's rotation causes day and night and the apparent movement of the Sun across the sky • To know the main parts of the human circulatory system (heart, blood vessels and blood). • To know that the heart pumps blood around the body. • To know that the blood vessels transport blood around the body.

- To know that the blood transports vital substances around the body, including oxygen and nutrients.
- To understand the relationships between different organ systems.
- To understand the impact of diet, exercise, drugs and lifestyle on the way a body functions.
- To know that the heart rate is the number of beats per minute.
- To know that exercise increases heart rate.
- To know that light travels in a straight line from a light source.
- To understand that luminous objects are seen as a result of light directly entering the eye, whereas non-luminous objects reflect light into the eye.
- To know that shiny surfaces reflect light uniformly
- To know that when light is reflected off a surface, its direction changes.
- To know that mirrors and periscopes work using reflection of light on smooth surfaces.
- To understand why shadows have the same shape as the objects that cast them as a result of light travelling in straight lines.
- To understand relationships between light sources, objects and shadows.
- To understand how and why the distance between the object and the screen affects the size of the shadow.
- To understand how the angle of a reflected ray is affected by the angle of the incoming ray, when reflected from a plane surface.
- To know that a life cycle shows the changes an animal or plant goes through until the reproduction of a new generation when the cycle starts again.
- To know that all living things must reproduce for the species to survive.
- To know that sexual reproduction requires two parents, whereas asexual reproduction only requires one parent.
- To know that there are different processes plants and animals use to reproduce (asexual and sexual reproduction).
- To know that gravity is a non-contact force that pulls objects together.
- To know that air resistance and water resistance are both types of friction.
- To know that unsupported objects fall towards the Earth because of gravity.
- To know that friction, air resistance and water resistance act in the opposite direction to a moving object.
- To know that when forces are imbalanced, the speed, shape or direction of an object changes.
- To know that when forces are balanced the speed, shape or direction of an object stays the same.
- To know that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.
- To know that rougher surfaces have more friction between them than smoother surfaces and how that may affect movement.
- To know that the larger the surface area of an object the greater the air or water resistance it creates.
- To know that ‘organism’ is a term used to refer to an individual living thing.
- To know that micro-organisms are organisms that are incredibly small and cannot usually be seen by the naked eye.
- To know the characteristics of the different groups of vertebrate and commonly found invertebrates.
- To know a wider variety of components in a series circuit (including buzzer and motor).

- To know the conventions used to draw circuit diagrams, including the recognised symbols for common components and using straight lines.
- To know that the voltage of a circuit can be changed and how this affects bulb brightness (or buzzer volume).
- To know that living things have changed over time.
- To know that fossils provide us with information about living things that inhabited the Earth millions of years ago.
- To know that characteristics are passed from parents to their offspring, but that all offspring vary from their parents.
- To know that over time, variation in offspring can affect animals' chances of survival in particular environments.
- To know that animals and plants have adapted to suit their environment over many millions of years and that this process can be called evolution.
- To describe the human life cycle, including the stages of growth and development (baby, toddler, child, teenager, adult, elderly).
- To describe changes that occur during puberty (in boys and girls).
- To know that gestation periods vary across mammals

National curriculum - end of KS2

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 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

identifying differences, similarities or changes related to simple scientific ideas and processes

using straightforward scientific evidence to answer questions or to support their findings.

identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

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

investigate the way in which water is transported within plants

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

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

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

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

recognise that soils are made from rocks and organic matter.

recognise that they need light in order to see things and that dark is the absence of light

notice that light is reflected from surfaces

recognise that light from the sun can be dangerous and that there are ways to protect their eyes

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.

compare how things move on different surfaces

notice that some forces need contact between two objects, but magnetic forces can act at a distance

observe how magnets attract or repel each other and attract some materials and not others

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

predict whether two magnets will attract or repel each other, depending on which poles are facing.

recognise that living things can be grouped in a variety of ways

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

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

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

construct and interpret a variety of food chains, identifying producers, predators and prey

compare and group materials together, according to whether they are solids, liquids or gases

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.

identify how sounds are made, associating some of them with something vibrating

recognise that vibrations from sounds travel through a medium to the ear

find patterns between the pitch of a sound and features of the object that produced it

find patterns between the volume of a sound and the strength of the vibrations that produced it

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

identify common appliances that run on electricity

construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers

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

recognise some common conductors and insulators, and associate metals with being good conductors.

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

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 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.

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.

describe the changes as humans develop to old age.

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

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

use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

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

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.

describe the movement of the Earth, and other planets, relative to the Sun in the solar system

describe the movement of the Moon relative to the Earth

describe the Sun, Earth and Moon as approximately spherical bodies

use the idea of the Earth?s rotation to explain day and night and the apparent movement of the sun across the sky.

explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object

identify the effects of air resistance, water resistance and friction, that act between moving surfaces

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

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

give reasons for classifying plants and animals based on specific characteristics.

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.

recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago

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

recognise that light appears to travel in straight lines

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

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

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

Progression of Skills & knowledge

Working scientifically

Year 1/2
Skills Posing questions • Exploring the world around them and raising their own simple questions. • Recognising there are different types of enquiry (ways to answer a question). • Responding to suggestions on how to answer questions. Planning • Beginning to recognise whether a planned test is fair. • With support, deciding if suggested observations are suitable. • Ordering a simple method. Predicting • Suggesting what might happen, often justifying with personal experience. Observing (qualitative data) • Using their senses to describe, in simple terms, what they notice or what has changed. Measuring (quantitative data) • Using non-standard units to measure and compare. • Beginning to use standard units and read simple scales to measure and compare. • Beginning to use simple measuring equipment to make approximate measurements. Researching • Gathering specific information from one simplified, specified source. Recording (diagrams) • Drawing and labelling simple diagrams. Recording (tables) • Using a prepared table to record results including: ● Numbers. ● Simple observations. ● Tally frequency.

Grouping and classifying

- Grouping based on visible characteristics.
- Organising questions to create a simple classification key.

Graphing

- Representing data using pictograms and block graphs.

Analysing and drawing conclusions.

- Using their results to answer simple questions
- Beginning to recognise when results or observations do not match their predictions.

Year 3/4

Skills Posing questions

- Beginning to raise further questions during the enquiry process.
- Considering what makes a testable question.
- Beginning to recognise that there are different types of enquiry and that they are suitable for different questions.
- Beginning to make suggestions about how different questions could be answered

Planning

- Beginning to select from options which variables will be changed, measured and controlled.
- Beginning to suggest what observations to make and how long to make them for.
- Planning a simple method, verbally and in writing.
- Beginning to write a simple method in numbered steps.
- Selecting and beginning to decide what simple equipment might be used to aid observations and measurements.

Predicting

- Making predictions about what they think will happen by: ● Using scientific knowledge and/or personal experience to explain their prediction (because…) ● Beginning to consider cause and effect when making predictions, where appropriate. ● Predicting a trend by considering how the changing variable will affect the measured variable. (The smoother the surface, the longer the distance the car will travel)

Observing (qualitative data)

- Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed.

Measuring (quantitative data)

- Using standard units to measure and compare.
- Using measuring equipment with increasing accuracy.

- Reading scales with unmarked intervals between numbers.

Researching

- Gathering specific information from a variety of sources.

Recording (diagrams)

- Beginning to draw more scientific diagrams by: ● Using some standard symbols. ● Drawing in 2D to produce simple line diagrams. ● Labelling with more scientific vocabulary.

Recording (tables)

- Using a prepared table to record results including more detailed observations.
- Using tables with more than two columns.
- Identifying and adding headings to tables.
- Beginning to design simple results tables.

Grouping and classifying

- Grouping based on visible characteristics and measurable properties.
- Populating a pre-prepared branching and number key.
- Choosing appropriate questions for classification keys.

Graphing

- Representing data using bar charts.
- Drawing bars with greater accuracy.
- Reading the value of bars with greater accuracy.

Analysing and drawing conclusions

- Writing a conclusion to summarise findings using simple scientific vocabulary.
- Beginning to suggest how one variable may have affected another.
- Beginning to quote results as evidence of relationships.
- Identifying data that does not fit a pattern (anomalous data).
- Recognising when results or observations do not match their predictions.
- Beginning to use identified patterns to predict new values or trends.

Evaluating

- Beginning to identify steps in the method that need changing and suggest improvements
- Identifying which variables were difficult to control and suggesting how to better control them.
- Commenting on the degree of trust by reflecting on: ● Results that do not fit a pattern (anomalies). ● The quality of results (accurate measurements and maintaining control variables).

- Beginning to identify new questions that would further the enquiry

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identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

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

investigate the way in which water is transported within plants

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

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

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

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

recognise that soils are made from rocks and organic matter.

recognise that they need light in order to see things and that dark is the absence of light

notice that light is reflected from surfaces

recognise that light from the sun can be dangerous and that there are ways to protect their eyes

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.

compare how things move on different surfaces

notice that some forces need contact between two objects, but magnetic forces can act at a distance

observe how magnets attract or repel each other and attract some materials and not others

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

predict whether two magnets will attract or repel each other, depending on which poles are facing.

recognise that living things can be grouped in a variety of ways

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

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construct and interpret a variety of food chains, identifying producers, predators and prey

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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.

identify how sounds are made, associating some of them with something vibrating

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use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

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

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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

Progression of Skills & knowledge

Working scientifically

Year 5/6

Skills Posing questions

- Raising questions throughout the enquiry process.
- Identifying testable questions.
- Selecting the most appropriate enquiry method to answer questions and give justification.

Planning

- Suggesting which variables will be changed, measured and controlled.
- Making and explaining decisions about what observations to make and how long to make them for.
- Writing a method including detail about how to ensure control variables are kept the same.
- Writing a method that considers reliability by planning repeated readings.
- Suggesting the most appropriate equipment to make observations and measurements and justifying their choices.

Predicting

- Making increasingly scientific predictions by: ● Using previous scientific knowledge and evidence to inform their predictions. ● Using scientific language to describe a potential outcome or explain why they think something will happen. ● Making links between topics to evidence a prediction.

Observing (qualitative data)

- Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed.

Measuring (quantitative data)

- Using standard units to measure and compare with increasing precision (decimals).
- Reading a wider variety of scales with unmarked intervals between numbers.

Researching

- Gathering answers to open-ended questions from a variety of sources.

Recording (diagrams)

- Drawing scientific diagrams by: ● Using a wider range of standard symbols. ● Drawing with increasing accuracy. ● Labelling with a broader range of scientific vocabulary. ● Annotating diagrams to explain concepts and convey opinions.

Recording (tables)

- Using tables with columns that allow for repeat readings.
- Suggesting headings to tables, including units.
- Designing results tables with increasing independence with consideration of variables where applicable.
- Calculating the mean average.

Grouping and classifying

- Grouping in a broader range of contexts
- Organising the layout of number and branching keys.
- Formulating appropriate questions for classification keys.

Graphing

- Representing data by using line graphs and scatter graphs.
- Plotting points with greater accuracy.
- Reading the value of plotted points with greater accuracy.

Analysing and drawing conclusions

- Recognise the following across a broader range of contexts and in more complexity: ● Naturally occurring patterns and relationships. ● Making comparisons to group and classify. ● Changes over time. ● Relevant secondary data.
- Writing a conclusion to summarise findings using increasingly complex scientific vocabulary.
- Suggesting with increasing independence how one variable may have affected another.
- Quoting relevant data as evidence of relationships.
- Identifying anomalies in repeat data and excluding results where appropriate.
- Comparing individual, class and/or model data to the prediction and recognising when they do not match.
- Using identified patterns to predict new values or trends.

Evaluating

- Identifying steps in the method that need changing and suggesting improvements.
- Identifying which variables were difficult to control and suggesting how to better control them.
- Commenting on the degree of trust by also reflecting on: ● Accuracy (human error with equipment). ● Reliability (repeating results). ● Sources of information (e.g. websites, books).
- Deciding what data to collect to further test direct relationships.

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describe the movement of the Earth, and other planets, relative to the Sun in the solar system

describe the movement of the Moon relative to the Earth

describe the Sun, Earth and Moon as approximately spherical bodies

use the idea of the Earth?s rotation to explain day and night and the apparent movement of the sun across the sky.

explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object

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

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

give reasons for classifying plants and animals based on specific characteristics.

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describe the ways in which nutrients and water are transported within animals, including humans.

recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago

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

recognise that light appears to travel in straight lines

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

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

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

Progression of Skills & knowledge

Science in action

Year 1/2	
Skills • Recognising the benefits of scientific research into plants and learning about the work of Dr. Percy Julian who discovered how to make plant-based medicines. • Recognising that certain job roles rely on understanding healthy plant growth. Exploring the impact of humans on plants in the environment.	Knowledge • Learning about the role of a weather reporter and how information about the weather is useful in everyday life. • Learning how to look after personal hygiene by washing themselves and their clothes. Investigating the benefits of exercise on health and wellbeing. • Learning about the role of marine biologists, how inventions in the industry have changed scientific research over time and how they work to protect ocean wildlife. • Learning about visual impairment and the importance of continued research in this area. Recognising how firefighters use the senses when doing their job. • Learning about Jane Goodall's key findings when studying chimpanzees in the wild. • Learning about the harmful effects of certain materials and how to take responsibility for protecting the environment. • Learning about the role of a botanist including the importance of identification and classification when studying plants. • To know about famous scientists throughout history. • To know about a range of jobs and careers that use scientific knowledge and methods. • To know about the work of modern day scientists.

	• To know about science in the news and recent discoveries. • To know there are spiritual, moral, social and cultural links with Science.
Year 3/4	
Skills • Looking at how different scientists formed conclusions about light and that collaborative work can either support or refute these ideas. • Exploring different jobs that consider light and shade and how light and shadows are used for entertainment in the arts. • Exploring the work of Mary Anning and modern day palaeontologists. • Using the fossil record to make suggestions about the past. • Observing human anatomy in the past and ethical dilemmas. Exploring real observation methods by scientists and evidence collected. • Determining why scientists need to work collaboratively and evaluate experiments. • Exploring the work of naturalists and the evidence they use to study animals. • Exploring how multiple scientists have contributed to an invention. • Suggesting why new inventions will change safety advice. • Exploring how calorimeters are scientific devices used to measure the chemical energy stored in food. • Exploring the uses of friction and magnets in everyday life and industry. • Researching how climate change affects the water cycle and the work of climate change scientists. • Researching how whales and dolphins communicate underwater to prove that sound travels faster and father in liquids than gases.	Knowledge • Learning about the job of a sports nutritionist and how they plan the diets of their athletes to optimise performance. • To know about famous scientists throughout history. • To know about a range of jobs and careers that use scientific knowledge and methods. • To know about the work of modern day scientists • To know about science in the news and recent discoveries • To know there are spiritual, moral, social and cultural links with Science. • To know about the methods and equipment used by scientists throughout history and how these have led to modern methods. • To know how scientific knowledge has changed over time, leading to the current understanding of Science. • To know about current scientific research and what it aims to achieve in the future. • To know that collaboration and peer reviewing are essential for effective scientific progress.

• Exploring the safe decibel range and jobs that require ear protection or sound proofing. • Researching how conservation issues are affecting the planet and what can be done to address them. • Exploring the role of taxonomists and how they create classification keys • Discovering the importance of conservationists like Greta Thumberg and scientific communicators like Sir David Attenborough. • Learning about the work of botanists and why their research is so important • Exploring how biomimicry involves the understanding of plant and seed structure to inform product design.	

National curriculum - end of KS2

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 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

identifying differences, similarities or changes related to simple scientific ideas and processes

using straightforward scientific evidence to answer questions or to support their findings.

identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

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

investigate the way in which water is transported within plants

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

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

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

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

recognise that soils are made from rocks and organic matter.

recognise that they need light in order to see things and that dark is the absence of light

notice that light is reflected from surfaces

recognise that light from the sun can be dangerous and that there are ways to protect their eyes

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.

compare how things move on different surfaces

notice that some forces need contact between two objects, but magnetic forces can act at a distance

observe how magnets attract or repel each other and attract some materials and not others

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

predict whether two magnets will attract or repel each other, depending on which poles are facing.

recognise that living things can be grouped in a variety of ways

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

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

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

construct and interpret a variety of food chains, identifying producers, predators and prey

compare and group materials together, according to whether they are solids, liquids or gases

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.

identify how sounds are made, associating some of them with something vibrating

recognise that vibrations from sounds travel through a medium to the ear

find patterns between the pitch of a sound and features of the object that produced it

find patterns between the volume of a sound and the strength of the vibrations that produced it

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

identify common appliances that run on electricity

construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers

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

recognise some common conductors and insulators, and associate metals with being good conductors.

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

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 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.

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.

describe the changes as humans develop to old age.

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

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

use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

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

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