Science

Y1

Programme of Study

Plants

CORE

- Identify and describe the basic structure of a variety of common flowering plants.
- Identify and describe the basic structure of a variety of trees
- Identify and name common wildflowers and garden plants
- Identify plants in the local area
- Describe the features of deciduous trees
- Describe the feature of evergreen trees.
- Observe trees in the local area.
- Investigate how things planted change over time.
- To know where our food comes from.
- Plan a dish using crops grown during the year.

WORKING DEEPER

- Explain what they have been doing to others and what they have learned.
- Make links between prior and current learning in a familiar relatable context.

Ask simple questions and recognising that they can be answered in different ways

Observe closely.

The Human Body

CORE

- Identify and name parts of the human body
- Draw and label parts of the human body
- Identify which part of the body is associated with the sense of sight
- Identify which part of the body is associated with the sense of sound.
- Identify which part of the body is associated with the sense of taste
- Identify which part of the body is associated with the sense of touch
- Identify which part of the body is associated with the sense of smell
- Ask simple questions and recognising that they can be answered in different ways.
- Use observations and ideas to suggest answers to questions.
- Perform simple tests.

WORKING DEEPER

- Make links between prior and current learning in a familiar relatable context.
- Explain what they have been doing to others and what they have learned.

Materials

CORE

- Explore materials - wood, plastic, glass and metal
- Explore materials - rocks
- Distinguish between an object and the material from which it is made.
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.
- Explain what happens to certain materials when they are heated and cooled.
- Observe if a material floats or sinks.
- Investigate if a material absorbs water.
- Observe closely, using simple equipment.
- Use observations and ideas to suggest answers to questions.

WORKING DEEPER

- Explain what they have been doing to others and what they have learned.
- Make links between prior and current learning in a familiar relatable context.

Seasonal changes

CORE

- Observe changes across the four seasons
- Observe and describe weather associated with the seasons and how day length varies
- Explore why it is important to care for the planet
- Discuss how we can care for the planet
- Ask simple questions and recognising that they can be answered in different ways

WORKING DEEPER

- Observe features in the environment and explain that these are related to a specific season.
- Talk about weather variation in different parts of the world.
- Make links between prior and current learning in a familiar relatable context.
- Explain what they have been doing to others and what they have learned.

Animals

CORE	WORKING DEEPER
Identify and name a variety of mammals	Explain what they have been doing to others and what they have learned.
Identify and name a variety of birds	Make links between prior and current learning in a familiar relatable context.
Identify and name a variety of fish	
Identify and name a variety of amphibians	
Identify and name a variety of reptiles	
Compare and group animals	
Identify and name a variety of common animals that are carnivores	
Identify and name a variety of common animals that are herbivores	
Identify and name a variety of common animals that are omnivores	
Ask simple questions and recognising that they can be answered in different ways.	

Gather and record data to help in answering questions.

Use observations and ideas to suggest answers to questions.

Seasonal Change

CORE

Observe changes across the 4 seasons

Collect and record data across the seasons

WORKING DEEPER

Make links between prior and current learning in a familiar relatable context.

Explain what they have been doing to others and what they have learned.

Science

Y2

Programme of Study

Plants

CORE	WORKING DEEPER
Observe and describe how seeds and bulbs grow into mature plants	Explain what they have been doing to others and what they have learned.
Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	Make links between prior and current learning in a familiar relatable context.
Describe what plants need to survive and link it to where they are found	
Explain that plants grow and reproduce in different ways	
Identify if it is a seed or bulb.	
Ask simple questions and recognising that they can be answered in different ways.	
Perform simple tests.	

Animals

CORE

- Find out about and describe the basic needs of mammals
- Find out about and describe the basic needs of birds
- Find out about and describe the basic needs of fish
- Find out about and describe the basic needs of reptiles
- Find out about and describe the basic needs of humans
- Ask simple questions and recognising that they can be answered in different ways.
- Gather and recording data to help in answering questions.
- Use observations and ideas to suggest answers to questions

WORKING DEEPER

- Find out about and describe the basic needs of amphibians
- Make links between prior and current learning in a familiar relatable context.
- Explain what they have been doing to others and what they have learned.

Materials

CORE

Identify and compare the suitability of a variety of everyday materials, including wood, paper and cardboard for particular uses

Identify and compare the suitability of a variety of everyday materials, including brick and rock for particular uses.

Identify and compare the suitability of a variety of everyday materials, including glass and plastic for particular uses

Identify and compare the suitability of a variety of everyday materials, including metal for particular uses

Identify and compare the suitability of a variety of everyday materials, including fabrics for particular uses

Tell which materials cannot be changed back after heating, cooling, bending, stretching or twisting

Compare and test same object, different material.

Investigate if materials bend, squash, twist and stretch

WORKING DEEPER

Explain what they have been doing to others and what they have learned.

Make links between prior and current learning in a familiar relatable context.

Plan an experiment to test if a material is waterproof.

Identify how plastic can be helpful or harmful.

Discuss how plastic waste can be reduced at school.

Ask simple questions and recognising that they can be answered in different ways.

Perform simple tests.

Living things and their habitats

CORE

- Explore and compare the differences between things that are living, dead, and things that have never been alive
- Identify that most living things live in habitats to which they are suited - polar
- Identify and name a variety of plants and animals in their habitat, including micro-habitats
- 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
- Identify that most living things live in habitats to which they are suited - desert, polar, ocean, woodland, micro, local habitat.
- 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.
- Explore and compare the differences between things that are living, dead, and things that have never been alive.

WORKING DEEPER

- Name some characteristics of an animal that help it to live in a particular habitat.
- Make links between prior and current learning in a familiar relatable context.
- Explain what they have been doing to others and what they have learned.

Describe what wildlife does for us.

Explain what we can do for wildlife.

Gather and record data to help in answering questions.

Use observations and ideas to suggest answers to questions

Observe closely, using simple equipment.

Humans

CORE

Describe the importance for humans of exercise

Describe the importance for humans of eating the right amount of different food types

Describe the importance of hygiene

Identify how to care for your teeth

WORKING DEEPER

Explain what they have been doing to others and what they have learned.

Make links between prior and current learning in a familiar relatable context.

Growing Up

CORE	WORKING DEEPER
Notice that animals, including humans, have offspring which grow into adults.	Make links between prior and current learning in a familiar relatable context.
Explore the life cycle of a human	Explain what they have been doing to others and what they have learned.
explore the life cycle of different mammals	
Explore the life cycle of amphibians	
Explore the life cycle of a butterfly	
Compare different life cycles.	
Ask simple questions and recognising that they can be answered in different ways	
Observe closely, using simple equipment.	

Science

Y3

Programme of Study

Plants

CORE

- Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- Dissect and examine parts of a plant
- Investigate plant growth (2 sessions)
- Investigate water transportation in plants
- Examine different seeds
- Explore the life cycle of a plant
- Describe the process of pollination
- Describe how seeds are dispersed
- Explain the life cycle of a plant
- Use straightforward scientific evidence to answer questions or to support their findings.

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Ask relevant questions and using different types of scientific enquiries to answer them.

Set up simple practical enquiries, comparative and fair tests

Skeletons and Movement

CORE

- Identify and name bones in the human body
- Explore functions of the skeleton
- Identify and name bones in a range of animals
- Identify animals with and without a spine
- Investigate if all skeletons the same?
- Explore Joints
- Investigate how we move
- Ask relevant questions and using different types of scientific enquiries to answer them
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Nutrition and diet

CORE

- Explore different Food Groups
- Understand the five food groups
- Identify Balanced diets
- Compare diets
- Identify Animal diets
- What is food waste?
- How can we reduce our food waste?
- Use straightforward scientific evidence to answer questions or to support their findings.
- Report on findings from enquiries

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Light

CORE

Light - 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

The Sun - Recognise that light from the sun can be dangerous and that there are ways to protect their eyes

Shadows - Recognise that shadows are formed when the light from a light source is blocked by a solid object

Explain the difference between opaque, translucent and transparent

Find patterns in the way that the size of shadows change

Explain how shadows change when the light source is moved closer to or further away from the object

Record findings using simple scientific language, drawings, labelled diagrams

WORKING DEEPER

Evaluate conclusions when working scientifically.

Make links between prior and current learning in a familiar relatable context.

Apply knowledge consistently, confidently and fluently.

Explain what they have been doing to others and what they have learned.

Set up simple practical enquiries, comparative and fair tests.

Use results to draw simple conclusions, make predictions for new

Forces and magnets

CORE

- Explore forces - 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
- Set up simple practical enquiries, comparative and fair tests
- Use results to draw simple conclusions

WORKING DEEPER

- Investigate the strengths of different magnets and find fair ways to compare them
- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Rocks and Fossils

CORE

- Identify different types of rocks
- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
- Test rocks based of appearance and physical properties.
- Carry out a local rock survey
- Make systematic and careful observations
- Ask relevant questions and using different types of scientific enquiries to answer them.
- Report on findings from enquiries

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Science

Y4

Programme of Study

Living things and their habitats

CORE

- Recognise that animals can be grouped in a variety of ways
- Identify vertebrates and invertebrates.
- Explore and use classification keys to help group, identify and name a variety of animals
- Recognise that plants can be grouped in a variety of ways
- Explore and use classification keys to help group, identify and name a variety of plants
- Recognise that environments can change and this can sometimes pose dangers to living things
- Give reasons for how they have classified animals and plants using characteristics
- Identify what a food chain is
- Construct and interpret a variety of food chains, identifying producers, predators and prey

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Explore the impacts of habitat destruction, hunting, farming and overfishing on the population of different living things

Explore what deforestation is.

Investigate what the impacts of deforestation are in the UK and the rest of the world?

Ask relevant questions and using different types of scientific enquiries to answer them.

Set up simple practical enquiries, comparative and fair tests.

The Digestive System

CORE

- Compare teeth of carnivores and herbivores
- Identify the different types of teeth in humans and their simple functions
- Describe the simple functions of the basic parts of the digestive system in humans
- Construct and interpret a variety of food chains, identifying producers, predators and prey
- Plan an investigation to test tooth decay
- Use results to draw simple conclusions

WORKING DEEPER

- Explain how certain living things depend on one another to survive
- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

States of matter

CORE

- 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)
- Investigate how long it takes for ice to melt
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature
- Explore whether temperature affects the rate of evaporation.
- Identify differences, similarities or changes related to simple scientific ideas.
- Ask relevant questions and using different types of scientific enquiries to answer them

WORKING DEEPER

- Relate temperature to the change in state of materials
- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Make systematic and careful observations

Set up simple practical enquiries, comparative and fair tests

Sound

CORE

- 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
- Explain how pitch and volume can be changed in a variety of ways
- Investigate which materials give the best insulation for sound
- Set up simple practical enquiries, comparative and fair tests

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Make systematic and careful observations

Use results to draw simple conclusions and make new predictions

Electricity

CORE

- Identify common appliances that run on electricity
- Build and draw a series circuit
- 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
- Explain how a bulb might get brighter
- Explain why cautions are necessary for working safely with electricity
- Use results to draw simple conclusions

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Science

Y5

Programme of Study

Living things and their habitats

CORE	WORKING DEEPER
Describe the differences in the life cycle of a mammal, an amphibian, an insect and a bird	Explain what they have been doing to others and what they have learned.
Describe the life process of reproduction in some plants and animals	
Recording data and results of increasing complexity	

Animals including humans

CORE	WORKING DEEPER
Describe the changes as humans develop into old age	Describe changes experienced in puberty
Explore the gestation periods of different mammals.	Explain what they have been doing to others and what they have learned.
Investigate the connection between gestation period and life span.	Make links between prior and current learning in a familiar relatable context.
Recording data and results of increasing complexity	

Properties of materials

CORE

- Compare and group together everyday materials based on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and their response to magnets
- Explore and investigate which materials are the best insulators of heat
- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- 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
- Plan different types of scientific enquiries to answer questions
- Take measurements using a range of scientific equipment
- Use test results to make predictions to set up further comparative and fair tests

WORKING DEEPER

- Make links between prior and current learning in a familiar relatable context.
- Evaluate conclusions when working scientifically.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Earth and space

CORE

- 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
- Compare the time of day at different places on the earth
- Record data and results of increasing complexity
- Identify scientific evidence that has been used to support or refute ideas or arguments.

WORKING DEEPER

- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Forces

CORE

- Identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- Design and evaluate an effective parachute
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect
- Plan different types of scientific enquiries to answer questions,
- Use a range of scientific equipment, with increasing accuracy and precision
- Report and present findings from enquiries
- Take measurements with increasing accuracy

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Reversible and Irreversible Changes

CORE

- Explore how some materials will dissolve in a liquid to form a solution.
- Describe how to recover a substance from a solution.
- Choose effective ways to separate mixtures including filtering, evaporating and sieving
- Explore a variety of reversible changes.
- Investigate a variety of irreversible changes.
- Use test results to make predictions to set up further comparative and fair tests
- Take measurements, using a range of scientific equipment

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Reproduction

CORE	WORKING DEEPER
Understand sexual reproduction in mammals	Evaluate conclusions when working scientifically.
Describe the life process and reproduction in plants	Explain what they have been doing to others and what they have learned.
Explore the process of pollination in flowering plants	Make links between prior and current learning in a familiar relatable context.
To understand asexual reproduction	Apply knowledge consistently, confidently and fluently.
Make close observations of cloning plants.	
Interpret data from the plant experiment.	
Use test results to make predictions to set up further comparative and fair tests.	

Sustainability

CORE

Understand what global warming is and why it is happening

Explore the impacts of global warming.

Describe what plastic pollution is?

Explore the impacts of plastic pollution on the planet.

WORKING DEEPER

Make links between prior and current learning in a familiar relatable context.

Science

Y6

Programme of Study

Living things and their habitats

CORE

- 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
- Explore how microorganisms can be classified according to their features, in the same way as animals and plants.
- Give reasons for classifying plants and animals based on specific characteristics
- Sub divide original groupings and explain their divisions
- Explore the work of Carl Linnaeus and his system of classifying organisms

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Animals including humans

CORE

- Describe the ways in which nutrients and water are transported within animals, including humans
- Identify and name the parts of the 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
- Compare the organ systems of humans to other animals
- Name and locate the major human organs
- Investigate how the duration of exercise affects heart rate.
- Carry out or observe a heart dissection to learn more about the physical structures of the heart and how they help with its function.
- Plan different types of scientific enquiries to answer questions

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Evolution and inheritance

CORE

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

Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents

Identify how animals and plants are suited to their environment in different ways and that adaptation may lead to evolution

Explain how some living things adapt to survive in extreme conditions

Analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four feet

WORKING DEEPER

Explain what they have been doing to others and what they have learned.

Apply knowledge consistently, confidently and fluently.

Make links between prior and current learning in a familiar relatable context.

Light

CORE

- Recognise that light travels in straight lines
- 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
- Explain why shadows have the same shape as the objects that cast them
- Explore whether the distance from a light source affects the size of the shadow
- Explore the concept of white light
- Explain how different colours of light can be created
- Explore how refraction occurs.
- Record data and results of increasing complexity
- Plan different types of scientific enquiries to answer questions

WORKING DEEPER

- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Electricity

CORE

- Construct and draw circuit using symbols.
- 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
- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells in the circuit
- Make a traffic light system or similar
- Plan how they will experiment with a circuit to find the answer to the question
- Record data and results of increasing complexity
- Plan different types of scientific enquiries to answer questions
- Take measurements, using a range of scientific equipment
- Use test results to make predictions to set up further comparative and fair tests

WORKING DEEPER

- Explain the danger of a short circuit
- Evaluate conclusions when working scientifically.
- Make links between prior and current learning in a familiar relatable context.
- Apply knowledge consistently, confidently and fluently.
- Explain what they have been doing to others and what they have learned.

Sustainability

CORE

Compare the use of renewable energy to the burning of fossil fuels and the impact they have on the environment.

Identify the impact of renewable and non-renewable energy on the environment

Explore the concept of light pollution and look at ways that they can reduce light pollution in their local area.

Identify three types of light pollution: glare, light trespass and skyglow

WORKING DEEPER

Make links between prior and current learning in a familiar relatable context.

Explain what they have been doing to others and what they have learned.