



Science Program of Study

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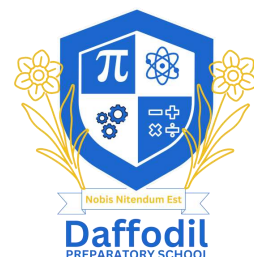


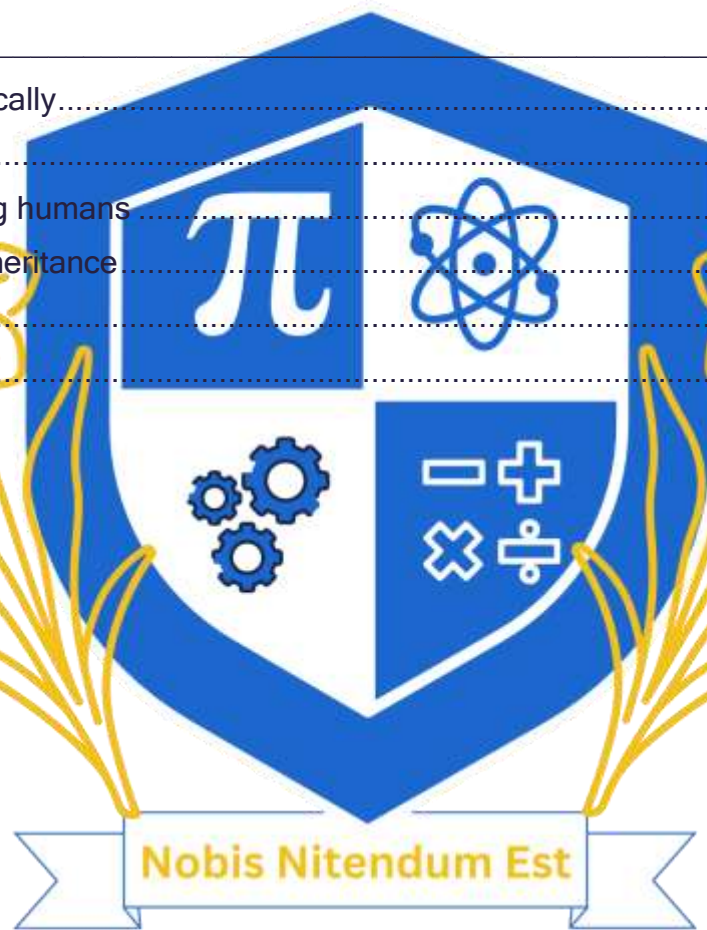
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INTENT

The aim of our Science curriculum is to develop our pupils' interest and understanding of the world around them. Each year group map has the units of work providing both a bank of scientific knowledge in line with the national Curriculum of 2014 and also the skills children need to think scientifically. These skills are carefully planned so they build on and reinforce previous learning.

When appropriate, the emphasis is on practical and group work for pupils to apply these scientific knowledge and skills to further deeper their understanding of the curriculum.



YEAR 1

Working scientifically

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.

Plants

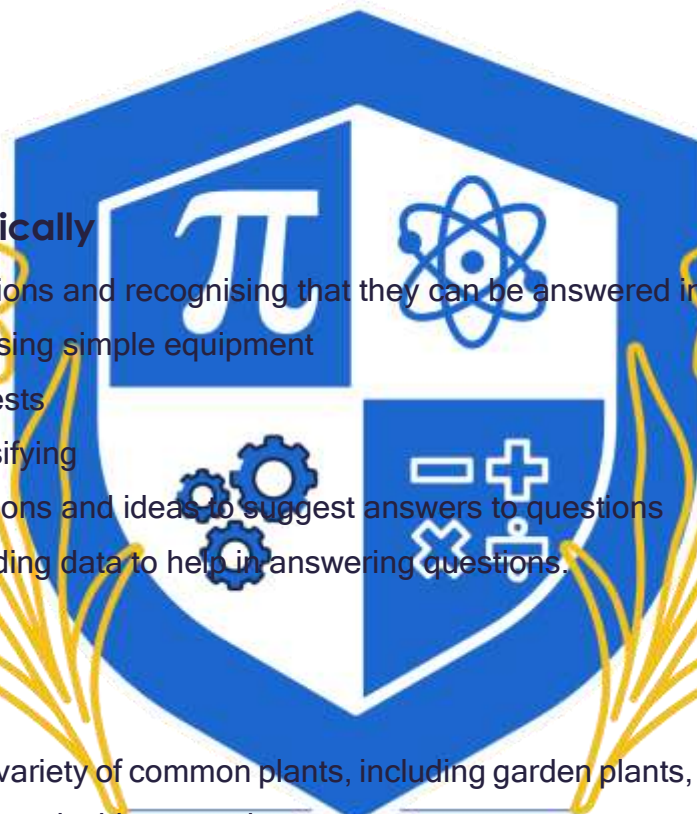
identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen
 identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers.

Animals, including humans

identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates.
 identify and name a variety of common animals that are carnivores, herbivores, and omnivores.
 describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals, and invertebrates, and including pets)
 identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

Everyday materials

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
 describe the simple physical properties of a variety of everyday materials



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compare and group together a variety of everyday materials on the basis of their simple physical properties

find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Light

observe and name a variety of sources of light, including electric lights, flames and the Sun
associate shadows with a light source being blocked by something.

Seasonal changes

observe changes across the four seasons

observe and describe weather associated with the seasons and how day length varies.



YEAR 2

Working scientifically

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.

All living things and their habitats

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 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 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.

Plants

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.

Animals, including humans.

notice that animals, including humans, have offspring which grow into adults
 find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
 describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

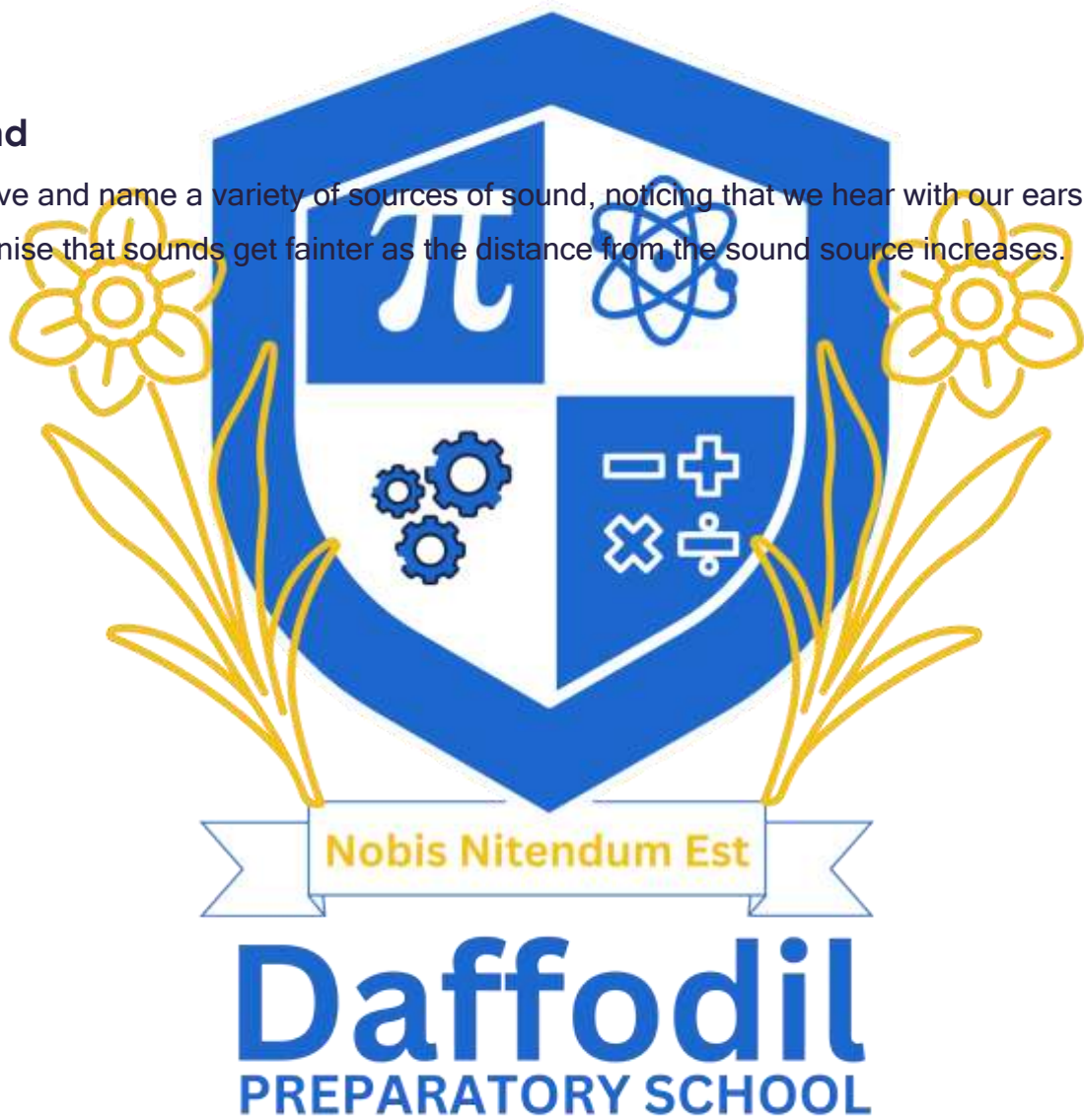
Uses of everyday materials

identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard
 compare how things move on different surfaces.



Sound

observe and name a variety of sources of sound, noticing that we hear with our ears recognise that sounds get fainter as the distance from the sound source increases.



YEAR 3

Working scientifically

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.

Nobis Nitendum Est

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Plants

identify and describe the functions of different parts of flowering plants: roots, stem, 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.

Animals, including humans

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 animals have skeletons and muscles for support, protection and movement.

Rocks

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.

Light

notice that light is reflected from surfaces

find patterns that determine the size of shadows.

Forces and magnets

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.

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YEAR 4

Working scientifically

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

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All living things

identify and name a variety of living things (plants and animals) in the local and wider environment, using classification keys to assign them to groups.

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

Animals, including humans.

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.

States of matter

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.

Sound

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

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.

Electricity

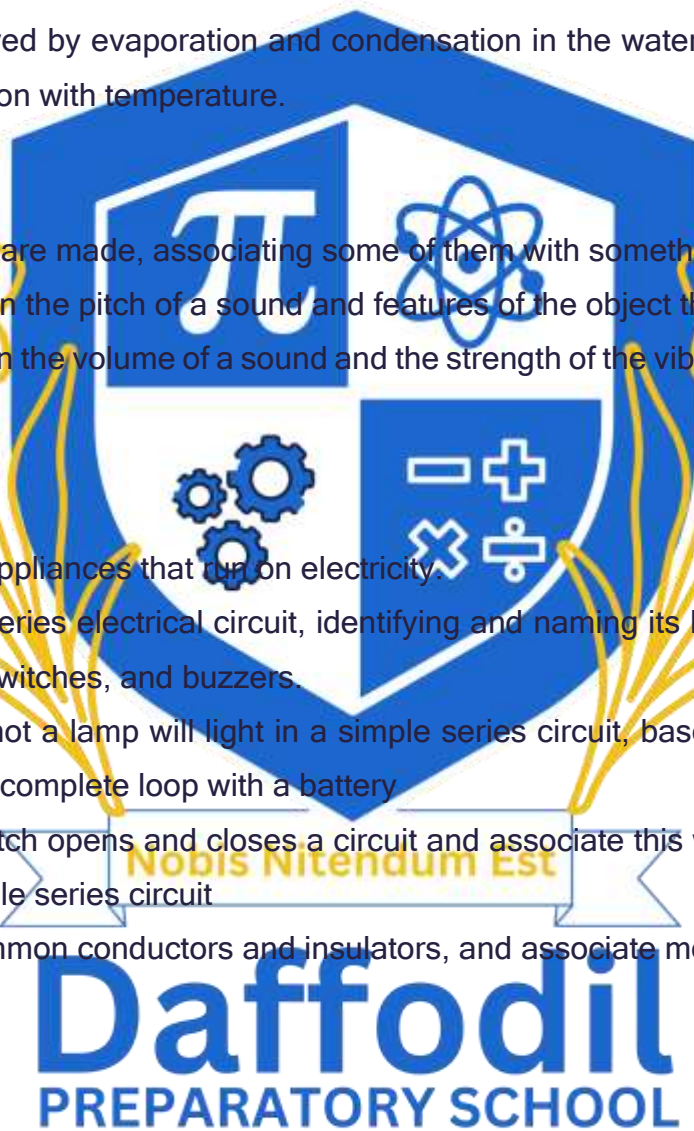
identifies common appliances that run on electricity.

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.



YEARS 5

Working scientifically

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

recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs

using test results to make predictions to set up further comparative and fair tests

using simple models to describe scientific ideas

reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of 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.

All living things

explain 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.

Animals, including humans

describe the changes as humans develop from birth to old age.

Properties and changes of materials

compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets

understand 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.



Earth and space

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

and use the idea of the Earth's rotation to explain day and night. 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.

understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.



YEARS 6

Working scientifically

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

recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs

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

using simple models to describe scientific ideas

reporting and presenting findings from enquiries, including conclusions, causal relationships, and explanations of 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.

Nobis Nitendum Est

All living things

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.

Animals including humans

identify and name the main parts of the human circulatory system, and explain 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.

Evolution and inheritance

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 adapted to suit their environment in different ways and that adaptation may lead to evolution.

Light

understand 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, and to predict the size of shadows when the position of the light source changes.

Electricity

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.

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