

Subject	Science
Term	Cycle 2
Duration (approx.)	12 lessons
Module	Biology— Adaptation and Inheritance

Factual knowledge to be taught and assessed (including subject specific vocabulary)

Heredity as the process by which genetic information is transmitted from one generation to the next
 A simple model of chromosomes, genes and DNA in heredity.
 Define variation as the differences between organism of the same or different species. That variation is caused by genes, the environment, or both and identify the correct causes from a variety of examples
 Variation between individuals within a species being linear or categorical. That categorical data can be continuous or discontinuous, and that genes will be the cause of discontinuous data.
 Measurement of class data on e.g. height, hand span, eye colour and graphical representation of variation in histogram and bar chart to identify continuous and discontinuous variation
 the variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection
 changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction

Skills and concepts to be developed

Carry out investigations and interpret the results.

Formative Assessment one:

Use of key words in a synoptic paragraph linked to the module

Formative Assessment two:

Tally results of given data. Plot a bar chart and a histogram. Identify and explain which data is continuous and discontinuous.

Summative Assessment:

End of cycle test.

This test will cover questions from the topic and previous topics to check understanding.

Link to prior learning:

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.
 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.

Literacy and Numeracy:

How will high standards be promoted in this module?

Literacy -

Formative test 1 – key words and descriptions

Formative test 2 – Descriptive conclusion of results

Numeracy – Graph work to plot distribution

Link Forward: Where next for learning?

KS4 GCSE Biology

Evolution, inheritance and variation.
 The genome as the entire genetic material of an organism
 How the genome, and its interaction with the environment, influence the development of the phenotype of an organism
 The potential impact of genomics on medicine

Subject	Science
Term	Cycle 2
Duration (approx.)	12 lessons
Module	Chemistry— metals and acids

Factual knowledge to be taught and assessed (including subject specific vocabulary)

Writing word equations for chemical reactions

Recall and name products made when reacting metals with acids.

Describe thermal decomposition

Define exothermic and endothermic. Identify reactions which are exothermic or endothermic.

Skills and concepts to be developed

Present observations and data using appropriate methods, including tables and graphs.

Identify patterns and using observations, measurements and data to draw conclusions.

Formative Assessment one:

Use of key words in a synoptic paragraph linked to the module.

Formative Assessment two:

Write a method and establish whether a reaction is exothermic or endothermic.

Summative Assessment:

End of cycle test.

This test will cover questions from the topic and previous topics to check understanding.

Link to prior learning:

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.

**Literacy and Numeracy:
How will high standards be promoted in this module?**

Literacy -
Formative test 1 – key words and sentences
Formative test 2 – Writing a structured and logical method.

Numeracy –Calculation of temperature change, making measurements using a thermometer.

Link Forward: Where next for learning?

KS4 GCSE Chemistry

- Representing chemical reactions using formulae and using equations
- Combustion, thermal decomposition.
- Energy changes on changes of state (qualitative)

Subject	Science
Term	Cycle 2
Duration (approx.)	13 lessons
Module	Physics— Electricity and Magnetism

Factual knowledge to be taught and assessed (including subject specific vocabulary)

Magnetism

Magnetic poles, attraction and repulsion.

Magnetic fields by plotting with compass, representation by field lines.

Earth's magnetism, compass and navigation

The magnetic effect of a current.

Electromagnets, D.C. motors (principles only).

Current electricity

Potential difference, measured in volts.

Resistance, measured in ohms, as the ratio of potential difference (p.d.) to current.

Use patterns of p.d in series and parallel to predict p.d at different location circuits.

VIR calculations.

Skills and concepts to be developed

Ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience.

They should be encouraged to relate scientific explanations to phenomena in the world around them and start to use

Formative Assessment one:

Spellings and definitions of subject specific concepts.

Formative Assessment two:

Write a method for making and testing strength of an electromagnet. Draw a suitable results table with headings and appropriate range of DV. Identify variables and suggest how the IV might affect the DV.

Summative Assessment:

End of cycle test.

This test will cover questions from the topic and previous topics to check understanding.

Link to prior learning:

KS1 and 2 – Forces and magnets

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.

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.

Literacy and Numeracy:

How will high standards be promoted in this module?

Literacy -

Formative test 1 – spellings and descriptions

Formative test 2 – Descriptive and comparative extended answers.

Numeracy – Drawing a table for data

Link Forward: Where next for learning?

KS4 GCSE Physics

Electrical current

Motors

Magnetic Fields

Generators