



Subject: Science

Year 7

Overview

Science in Year 7 comprises of six units which build upon knowledge students have obtained from their previous years in preparation for the next key stage.

Students learn how to work scientifically by:

- 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, 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
- Evaluating experiments to suggest improvements for future experiments

Autumn

Autumn Term 1 & 2 **B1 Cells and Systems**

This topic looks at:

- Introducing students to the structure of the cell and understanding the role each organelle plays within cells
- Introducing students to the many different types of cell, each one having a different structure or feature so it can do a specific job
- The importance of diffusion within the body
- The structure and function of the skeleton/muscles
- Carrying out a chicken wing dissection to help understand how antagonistic muscles work

Skills focus:

- Increase students' confidence skills in independently setting up a light microscope which they can use to observe and draw cells
- Writing risk assessments

Key words: cytoplasm, mitochondria, specialised cell, diffusion, antagonistic

C1- Particles and Separation Techniques

This topic looks at:

- Particle theory- the arrangement and behaviour of particles in solids/liquids/gases
- Diffusion- what it is, when it happens, and factors affecting the speed at which it occurs
- Differences between atoms, elements, compounds and mixtures
- Simple separation techniques which include filtration, evaporation chromatography and distillation.

Skills focus:

- Calculating means from data collected
- Graph drawing skills (bar and line)

Key words: particles, compound, mixtures, filtration, chromatography

Assessment:

Students are assessed on their practical write up skills.

Students demonstrate their knowledge on particles when they complete the "Why does an ice cube melt?" badger task.

Students sit an end of topic test for both units.

B2 Diet, health and digestion

This topic looks at:

- Nutrients and the role they play in maintaining a balanced diet
- Carrying out food tests to help identify nutrients found within different foods
- Energy in foods and the requirements needed by different groups of people
- Introducing students to the importance of enzymes and the role they play within digestion
- Effects of drugs and alcohol on the body

Skills focus:

- Drawing and interpreting a scatter graph
- Writing risk assessments independently
- Evaluations

Key words: enzyme, digest, malnutrition, absorb, nutrient

P1- Forces

This topic looks at:

- Using at the relationship between speed, distance and time
- Representing journeys on a distance-time graph
- What a force is and different contact/non-contact forces
- Force diagrams
- Density of solids
- Hooke's Law

Skills focus:

- Arranging equations
- Converting units
- Drawing lines of best fit

- **Key words:** speed, density, Newtons, weight, reaction

- 5 short 16 mark tests (done at a time to fit in with lesson sequencing). Assessing the key knowledge taught in the 3 topics this term.

“The journey of a cheese sandwich” assessed task – digestion. Completed midway through diet and digestion topic.

Skills passport completion 2 – using book work with a specific focus on the enzyme/catalase practical. Also, the equation work in the physics topic and the use of units in the physics topic. Also using IUPAC symbols in C2.

C2 Atoms and the Periodic Table

This topic looks at:

- Structure of the atom and how this has changed over time
- Chemical symbols and formulae
- Representing chemical reactions as equations
- Difference between physical and chemical reactions
- Structure of the periodic table
- Patterns within the periodic table
- Conservation of mass

Skills focus:

- IUPAC symbols

Key words: electron, proton, neutron, element, period

P2- Moments, pressure and electricity

This topic looks at:

- Moment as a turning force
- Circuit symbols and diagrams
- Investigating current in series and parallel circuits
- Electrostatics

Skills focus:

- Arranging equations
- Converting units
- Drawing lines of best fit and dealing with anomalous data

Key words: moment, pressure, series circuit, parallel circuit, current

Assessment:

Students are assessed on their practical write up skills.

Students sit an end of topic test for both units.

Homework:

- Students given homework once a half term
- Students complete three from a choice of tasks
- Students will be made aware of when they have tests and the revision required to help prepare them for this