Secondary Stage 8 Science for Year 8

Scientific enquiry

Ideas and evidence

- Discuss the importance of developing empirical questions which can be investigated, collecting evidence, developing explanations and using creative thinking.
- Test predictions with reference to evidence gained.

Plan investigative work

- Select ideas and turn them into a form that can be tested.
- Plan investigations to test ideas.
- Identify important variables; choose which variables to change, control and measure.
- Make predictions using scientific knowledge and understanding.

Obtain and present evidence

- Take appropriately accurate measurements.
- Use a range of equipment correctly.
- Discuss and control risks to themselves and others.
- Present results as appropriate in tables and graphs.

Consider evidence and approach

- Make simple calculations.
- Identify trends and patterns in results (correlations).
- Compare results with predictions.
- Identify anomalous results and suggest improvements to investigations.
- Interpret data from secondary sources.
- Discuss explanations for results using scientific knowledge and understanding. Communicate these clearly to others.
- Present conclusions to others in appropriate ways.

Biology

Plants

- Explore how plants need carbon dioxide, water and light for photosynthesis in order to make biomass and oxygen.
- Describe the absorption and transport of water and mineral salts in flowering plants.

Humans as organisms

- Identify the constituents of a balanced diet and the functions of various nutrients. Secondary sources can be used.
- Understand the effects of nutritional deficiencies.
- Recognise the organs of the alimentary canal and know their functions. Secondary sources can be used.
- Understand the function of enzymes as biological catalysts in breaking down food to simple chemicals.
- Recognise and model the basic components of the circulatory system and know their functions.
- Understand the relationship between diet and fitness.
- Discuss how conception, growth, development, behaviour and health can be affected by diet, drugs and disease.
- Recognise the basic components of the respiratory system and know their functions.
- Define and describe aerobic respiration, and use the word equation.
- Explain gaseous exchange.
- Describe the effects of smoking. Secondary sources can be used.
- Discuss the physical and emotional changes that take place during adolescence.

- Describe the human reproductive system, including the menstrual cycle, fertilisation and foetal development.

Chemistry

States of matter

- Show how the particle theory of matter can be used to explain the properties of solids, liquids and gases, including changes of state, gas pressure and diffusion.

Material properties

- Describe and explain the differences between metals and non-metals.
- Give chemical symbols for the first twenty elements of the Periodic Table.
- Understand that elements are made of atoms.
- Explain the idea of compounds.
- Name some common compounds including oxides, hydroxides, chlorides, sulfates and carbonates.
- Distinguish between elements, compounds and mixtures.

Material changes

- Use a word equation to describe a common reaction. Secondary sources can be used.
- Describe chemical reactions which are not useful, e.g. rusting.

Physics

Forces and motion

- Calculate average speeds, including through the use of timing gates.
- Interpret simple distance/time graphs.

Sound

- Explain the properties of sound in terms of movement of air particles.
- Recognise the link between loudness and amplitude, pitch and frequency, using an oscilloscope.

Light

- Use light travelling in a straight line to explain the formation of shadows and other phenomena.
- Describe how non-luminous objects are seen.
- Describe reflection at a plane surface and use the law of reflection.
- Investigate refraction at the boundary between air and glass or air and water.
- Explain the dispersion of white light.
- Explain colour addition and subtraction, and the absorption and reflection of coloured light.

Magnetism

- Describe the properties of magnets.
- Recognise and reproduce the magnetic field pattern of a bar magnet.
- Construct and use an electromagnet.