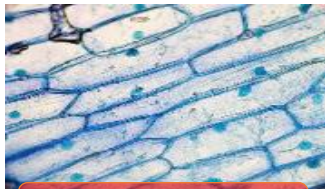




YEAR 10 LEARNING JOURNEY INFORMATION

SCIENCE

Cells The Atom Energy



Autumn term 1

Knowledge: I will learn how living organisms are made of cells, how substances are transported within and between cells, and how cells divide and specialise to carry out different functions. I will develop an understanding of atomic structure, including the particles that make up atoms, the development of atomic models, and explain patterns of groups in the periodic table. I will also learn about energy stores, transfers and efficiency, as well as how energy resources are used and their impact on the environment.

Skills: I will carry out investigations, interpret scientific evidence using calculations to explain biological, chemical and physical phenomena.

Particle model Bioenergetics



Spring term 2

Knowledge: I will learn about the particle model of matter, including the arrangement and movement of particles. I will develop an understanding of energy transfer by heating, specific heat capacity, and the relationship between temperature, energy and particle behaviour. I will also learn about bioenergetics, including photosynthesis and respiration, and how these processes provide energy for organisms and support life on Earth.

Skills: I will develop mathematical and analytical skills by calculating energy changes from temperature data and rates of photosynthesis from graphs, while also explaining how temperature and pressure affect gas particle motion and describing how glucose produced in photosynthesis is used in respiration and other biological processes.

Organisation Bonding Electricity



Autumn term 2

Knowledge: I will learn how the body's organ systems work together to support life, including the digestive, circulatory and respiratory systems, and how plants transport substances. I will develop an understanding of chemical bonding, including ionic, covalent and metallic bonding, and how bonding affects the properties of different substances. I will also learn about electricity, including electrical circuits, current, potential difference and resistance, and how electrical energy is transferred and used in everyday life.

Skills: I will develop mathematical and analytical skills by interpreting data and applying calculations to explain biological and physical processes.

Chemical changes Radiation



Summer term 1

Knowledge: I will learn about chemical changes, including reactivity, acids and alkalis, electrolysis, and how chemical reactions can be used to extract and purify metals. I will develop an understanding of atomic structure, including the arrangement of subatomic particles, isotopes, and the historical development of atomic models. I will also learn about radioactivity, different types of nuclear radiation, their properties, uses, and potential risks.

Skills: I will develop practical, analytical and mathematical skills by deducing the order of reactivity of metals from experimental results, predicting the products of neutralisation reactions, describing methods used to identify different types of radiation, and calculating half-life from graphs and numerical data.

Infection and response Quantities and energy changes



Spring term 1

Knowledge: I will learn how pathogens cause disease, how the body defends itself against infection, and the ways in which medicines and vaccinations help prevent and treat illness. I will develop an understanding of quantitative chemistry, including chemical measurements, chemical calculations and the conservation of mass in reactions. I will also learn about energy changes in chemical reactions, including exothermic and endothermic processes.

Skills: I will develop the ability to explain how vaccinations and white blood cells protect the body from disease, calculate percentage relative formula mass (%RFM), and draw and label reaction profile diagrams to show energy changes during chemical reactions.

Revision and exam skills Mock exams, Review and plan



Summer term 2

Knowledge: I will revise the fundamental concepts of biology, chemistry, and physics, including cell biology, atomic structure, energy, particle models, chemical reactions, and the organisation of living organisms. I will understand how scientific theories explain natural phenomena and how evidence is used to develop and evaluate scientific ideas. I will also learn to apply my knowledge to practical investigations, analyse data, solve mathematical problems, and explain processes occurring in the natural and physical world.

Skills: I will develop practical and analytical skills by following required practical methods, presenting and interpreting results using graphs, and analysing experimental data to identify patterns, draw conclusions and evaluate the quality of evidence.