



YEAR 7 SCIENCE: MY LEARNING JOURNEY

AUTUMN : PARTICLES



Knowledge: I will learn about the particle model, states of matter, and how particle behavior affects material properties. I will also cover accurate measurement, lab safety, and predicting state changes.

AUTUMN : SIMPLE LIVING THINGS



Knowledge: I will learn about the seven life processes (MRS GREN) and the levels of biological organisation. This also covers the structure of unicellular organisms, the proper use and magnification calculation for a microscope, and the principles and factors affecting the rate of diffusion.

AUTUMN : FORCES AND ENERGY



Knowledge: I will learn about energy stores and transfers, the conservation of energy, the definition and types of forces, vector and scalar quantities, calculating resultant force, and the concepts of stretching, squashing, and moments.

SPRING : REPRODUCTION



Knowledge: I will learn about flower structure, pollination, and seed dispersal in plants. I will also cover human reproduction: puberty, reproductive systems, the menstrual cycle, fertilisation, and contraception.

SPRING : ATOMS, ELEMENTS AND COMPOUNDS

Knowledge: I will learn about atoms, elements, and compounds, their relationships, and the periodic table. I will learn about subatomic particles, chemical symbols, and how to write chemical formulas for various substances.

SPRING : SPACE



Knowledge: I will learn about our solar system's planets, the Moon's gravitational influence on Earth and its phases, and how to differentiate between mass and weight using the $W=mg$ equation.



YEAR 7 SCIENCE: MY LEARNING JOURNEY

SUMMER : HEATING AND COOLING



Knowledge: I will learn about temperature, thermal energy, and energy transfers during heating and cooling. Key topics include heat, variables, constructing bar charts, and the process of conduction in solids.

SUMMER : CHEMICAL REACTIONS



Knowledge: I will learn about the conservation of mass, identifying chemical reaction signs, writing word and symbol equations, distinguishing physical and chemical changes, combustion, rusting, and exothermic and endothermic reactions.

SUMMER : MOVEMENT

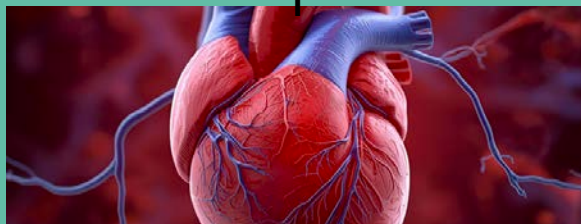


Knowledge: I will learn about the key functions and components of the human skeleton. This includes exploring different types of joints, their structure with cartilage and ligaments, and the principles of biomechanics that govern body movement.



YEAR 8 SCIENCE: MY LEARNING JOURNEY

AUTUMN : TRANSPORT



Knowledge: I will learn about the human circulatory system, including the heart and blood vessels, and the transport of vital substances in plants via specialised tissues like xylem and phloem, linking to cell organisation

AUTUMN : ACIDS AND ALKALIS



Knowledge: I will learn about hazard symbols and safety precautions, defining acids and alkalis, the pH scale and indicators, neutralisation, and how to make and name various salts formed from chemical reactions.

AUTUMN : NUTRITION



Knowledge: I will learn about the seven essential nutrients, balanced diets, food energy, laboratory food tests, the role of enzymes in digestion, the human digestive system, and plant photosynthesis.

SPRING : MOVING BY FORCE



Knowledge: I will learn about calculating resultant forces and speed, interpreting distance-time graphs, and comparing relative motion. I will learn the definition and applications of friction.

SPRING : ELECTRICAL CIRCUITS



Knowledge: I will learn about the fundamentals of electricity, including charged particles, current, and calculating charge. I will also learn about static electricity and the principles of magnetic fields, including their definition and effect.

SPRING : BREATHING AND RESPIRATION



Knowledge: I will learn about the process of ventilation, including inhalation and exhalation, gas exchange in the alveoli, and the mechanisms of aerobic and anaerobic respiration in humans and plants, along with the effects of exercise.



YEAR 8 SCIENCE: MY LEARNING JOURNEY

SUMMER : ADAPTATION AND EVOLUTION

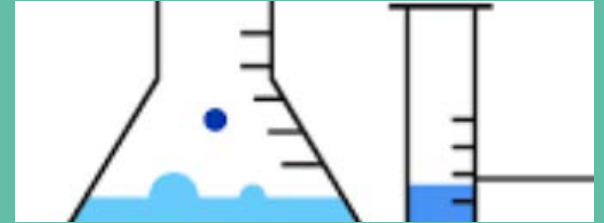


Knowledge: I will learn about individual variation, and the structural and behavioral adaptations that help animals and plants survive in diverse, including extreme, environments, as well as the supporting evidence for evolution.

SUMMER : SOUND AND LIGHT



Knowledge: I will learn about the properties of waves, how sound is produced and heard, and the various phenomena of light, including vision, color, reflection, and refraction.





YEAR 9 SCIENCE: MY LEARNING JOURNEY

AUTUMN : INTERDEPENDENCE OF ORGANISMS



Knowledge: I will learn about interdependence of organisms, food chains, food webs, competition, biotic and abiotic factors, energy transfer in pyramids of biomass, and the carbon cycle.

AUTUMN : FLOATING, SINKING AND DENSITY



Knowledge: I will learn about floating, sinking, and density, including how to calculate volume and density using the equation mass/volume , and the effects of pressure, upthrust, and various experimental errors.

AUTUMN : INHERITANCE AND THE GENOME



Knowledge: I will learn about the principles of inheritance, the structure and components of DNA, the process for extracting DNA from fruit, and the importance of studying the human genome in medicine.

SPRING : PERIODIC TABLE



Knowledge: I will learn about the structure of atoms, calculating sub-particles, and electron configuration. I will also learn about the properties of Group 1, 7, and 0 elements, ion formation, ionic bonding, and the periodic table's history

SPRING : PARALLEL CIRCUITS AND RESISTANCE



Knowledge: I will learn about series and parallel circuits, focusing on potential difference, current, and resistance calculations. I will also learn about investigating resistance, calculating means from data, permanent and induced magnetism, and the function of electromagnets.

SPRING : ENERGY CHANGES



Knowledge: I will learn about energy changes, including exothermic and endothermic reactions, energy level diagrams, activation energy, collision theory, and calculations using bond energies.



YEAR 9 SCIENCE: MY LEARNING JOURNEY

SUMMER : ENERGY OF MOVING PARTICLES



Knowledge: I will learn about internal energy, the relationship between heat and states of matter, and how to use specific heat capacity and latent heat. I will also learn how to do calculations for work done and power.

SUMMER : CELLS



Knowledge: I will learn about the differences between prokaryotic and eukaryotic cells, calculating magnification and real size, and using standard form. I will also learn about specialised cells, cell division, and adaptations of exchange surfaces.

SUMMER : EARTH



Knowledge: I will learn about Earth's composition, energy resources, and atmospheric changes. This includes the rock cycle, fossil fuels, and the environmental impacts of human activities.



YEAR 10 SCIENCE: MY LEARNING JOURNEY

AUTUMN : HUMAN ORGANISATION



Knowledge: I will learn about the human digestive system and enzymes, how pH affects enzyme activity, heart structure, blood flow, and the various components and functions of blood.

AUTUMN : PRESSURE



Knowledge: I will learn about pressure, including its definition and formula ($P=F/A$), how it relates to density and upthrust in liquids, and the factors affecting atmospheric and gas pressure, such as volume and temperature.

AUTUMN : BONDING



Knowledge: I will learn about the formation and properties of different chemical bonds, including covalent, metallic, and ionic bonding, as well as the structures and uses of giant molecules, polymers, and nanoparticles.

AUTUMN : CHEMICAL CHANGES



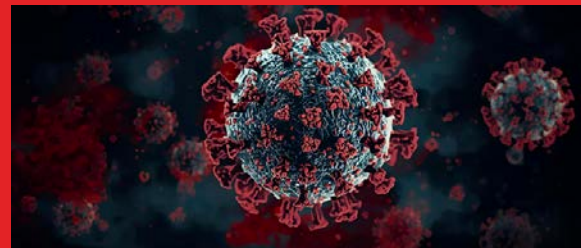
Knowledge: I will learn about chemical changes, focusing on metal reactivity, oxidation, reduction, and extraction. I will also study neutralisation, salt production, the pH scale, and the process of electrolysis.

SPRING : DOMESTIC USES OF ELECTRICITY



Knowledge: I will learn about domestic electricity, including energy resources, efficiency, power calculations for devices, the National Grid's function, and the characteristics of circuit components.

SPRING : HEALTH



Knowledge: I will learn about the definition of health and disease, covering non-communicable diseases like CHD and cancer, communicable diseases, human defense, vaccination, antibiotics, and drug development.



YEAR 10 SCIENCE: MY LEARNING JOURNEY

SPRING : QUANTITATIVE CHEMISTRY



Knowledge: I will learn about fundamental quantitative chemistry principles, including the conservation of mass, balancing chemical equations, calculating relative formula mass, using the concept of moles, and determining limiting reactants and solution concentration.

SPRING : PLANT ORGANISATION



Knowledge: I will learn about the crucial importance of plants, their internal structures and adaptations, key life processes like photosynthesis, transpiration, and osmosis, and how these processes relate to plant survival and human society.

SUMMER : BIOENERGETICS



Knowledge: I will learn about bioenergetics, covering photosynthesis, its limiting factors, the uses of glucose in plants, and the human body's response to exercise, including respiration and metabolism.

SUMMER : ENERGY OF OBJECTS



Knowledge: I will learn about calculating the kinetic energy of moving objects and the gravitational potential energy of raised objects. I will also cover Hooke's Law, forces, and the concept of elastic potential energy in springs.





YEAR 11 SCIENCE: MY LEARNING JOURNEY

AUTUMN : ORGANIC CHEMISTRY



- *Knowledge: I will learn about the fundamentals of organic chemistry, including crude oil, its formation, separation by fractional distillation, and the properties of hydrocarbons like alkanes and alkenes.*

AUTUMN : HOMEOSTASIS AND RESPONSE



Knowledge: I will learn about the process of homeostasis, including its mechanisms, the role of the nervous and endocrine systems, control of body temperature and blood glucose, and the menstrual cycle.

AUTUMN : CHEMICAL ANALYSIS



Knowledge: I will learn about pure substances, mixtures, and chemical formulations. The content explores separation methods like chromatography, tests for common gases, and identification of ions using precipitation and instrumental techniques.

AUTUMN : RATE AND EXTENT OF CHEMICAL CHANGE



Knowledge: I will learn about measuring reaction rates, how factors like temperature and concentration affect them, the role of catalysts, and the principles of dynamic equilibrium, including Le Chatelier's Principle and bond energies.

AUTUMN : INHERITANCE



Knowledge: I will learn about sexual and asexual reproduction, cell division (mitosis/meiosis), DNA, protein synthesis, and genetic inheritance. Key topics include variation, natural selection, and genetic technologies such as selective breeding and engineering.

SPRING : NUCLEAR RADIATION



Knowledge: I will learn about the historical development of atomic theory, the three types of nuclear radiation (alpha, beta, gamma), their properties, half-life, and applications, including the processes of nuclear fission and fusion.



YEAR 11 SCIENCE: MY LEARNING JOURNEY

SPRING : FORCE MASS AND



- *Knowledge: I will learn about calculating resultant forces using scale vector diagrams and analyzing free body diagrams. I will also learn about interpreting velocity-time graphs and understanding terminal velocity.*

SPRING : TRANSVERSE AND LONGITUDINAL WAVES



Knowledge: I will learn about the properties of waves, including amplitude, wavelength, and frequency. I will also learn about transverse and longitudinal waves, wave speed calculations, reflection, refraction, and the electromagnetic spectrum.

SPRING : CHEMISTRY AND THE ATMOSPHERE



Knowledge: I will learn about the atmosphere's composition, its early evolution through volcanic activity and photosynthesis, the mechanism of global warming by greenhouse gases, and the causes and effects of climate change and atmospheric pollutants.

SPRING : BIODIVERSITY AND HUMAN IMPACTS



Knowledge: I will learn how Human activities can affect biodiversity and some ways in which biodiversity is maintained.

SPRING : USING RESOURCES



Knowledge: I will learn about sustainable resource use, including water purification, treating wastewater, biological metal extraction, and assessing the environmental impact of products using life cycle assessments and recycling.

SPRING : PHYSICS ONLY UNITS



MOTORS

Knowledge: I will learn about the principles of electric motors, including the motor effect and Fleming's left hand rule. The unit also explores applications like loudspeakers, the generator effect, and transformers.

SPACE

